IN THE UNITED STATES DISTRICT COURT FOR THE EASTERN DISTRICT
OF VIRGINIA
Richmond Division

GOLDEN BETHUNE-HILL, *et al.*,

Plaintiffs,

v.

VIRGINIA STATE BOARD OF ELECTIONS, *et al.*,

Defendants.

Civil Action No. 3:14cv852

REPORT OF THE SPECIAL MASTER

December 7, 2018

Bernard Grofman*
Special Master

*Bernard Grofman is Distinguished Professor of Political Science and Jack W.
Peltason Endowed Chair of Democracy Studies at the University of California,
Irvine, and former Director of the UCI Center for the Study of Democracy. His
research deals with topics such as voting rights, electoral rules, theories of
representation, behavioral social choice, and political science methodology. He is co-
author of five books (four from Cambridge University Press and one from Yale
University Press), and co-editor of 23 other books; with over 300 research articles
and book chapters, including ten in the *American Political Science Review*. A
member of the American Academy of Arts and Sciences since 2001, he has been a
scholar-in-residence at universities and research centers in the U.S., Austria,
Canada, France, Germany, Hungary, Italy, Japan, the Netherlands, Spain, and the
UK, and he has an honorary Ph.D. from the University of Copenhagen (Denmark)
for his research on comparative electoral systems. He has previously been involved
as a consultant or expert witness for federal courts, the U.S. Department of Justice,
both major political parties at a state or national level, and civil rights groups such
as the NAACP Legal Defense and Educational Fund and the Mexican-American
Legal Defense and Educational Fund. As a specialist on redistricting, his own
research, or co-authored Amicus Briefs, or chapters in books he has edited, has been
cited in more than a dozen U.S. Supreme Court decisions, most recently in *Arizona
State Legislature v. Arizona Independent Redistricting Commission* (2015) and,
perhaps most notably, in *Thornburg v. Gingles*, 478 US 30 (1986).

REPORT OF THE SPECIAL MASTER

EXECUTIVE SUMMARY

Because there is no new plan offered by the State of Virginia for the House of Delegates that must be given special deference as a potential remedy, the starting point for any court remedial plan remains the 2011 Enacted Plan. But, to the extent the 2011 Enacted Plan for the House of Delegates "subordinated traditional districting principles to racial considerations" it is "not owed deference" *Abrams v. Johnson*, 521 U.S. 74, at 85 (1997). There were eleven districts in the 2011 Enacted plan identified as unconstitutional: districts 63, 69, 70, 71, 74, 77, 80, 89, 90, 92, and 95. These districts must be redrawn in a constitutional fashion in any remedy. Moreover, any court adopted plan must be narrowly tailored to remedy the constitutional infirmities in the 2011 enacted plan.

One important element of a narrowly tailored remedy is that it should confine its changes to those districts which must be changed in the process of the obligatory redrawing of the 11 unconstitutional districts. At minimum, this principle of narrow tailoring suggests the appropriateness of limiting the changes in any remedial plan to the 11 unconstitutional districts and to the 22 additional districts that are adjacent to the unconstitutional ones -- unless there are compelling geographic or demographic reasons to the contrary. This principle would limit changes to no more than 33 districts.

The principle of narrow tailoring also suggests limiting district changes in the remedial plan to the 23 districts that contain pieces of counties that are also contained within the unconstitutional districts, except as might be needed to assure population balance across the redrawn districts. Unconstitutionality was specifically found for only eleven districts in the 2011 enacted plan –with this finding in all but one of the districts that were drawn with the avowed aim of containing a 55% black voting percentage. However, as a matter of simple geographic logic, if there are districts other than the unconstitutional eleven that contain portions of the populations of some of the 15 counties that have pieces in the eleven districts, at least some of those districts had to have been affected by/implicated in the line drawing that created the unconstitutionality in the eleven districts found to be unconstitutional. This is especially true if the portion(s) of a county not contained within the unconstitutional districts have populations that are racially distinct from the portion(s) of the county found inside the unconstitutional districts. Thus, remedying the unconstitutionality of the eleven districts will, necessarily, require changes in the district boundaries of some of the additional districts containing the counties found within the unconstitutional eleven.   In terms of this logic, as many as 34 districts might need to be redrawn.

However, on the one hand, not all of these 34 districts are either unconstitutional or adjacent to one of the unconstitutional districts. And, on the other hand, not all of the districts not found to be unconstitutional that lie adjacent to the unconstitutional districts contain pieces of one or more of the counties found

in an unconstitutional district. There are three districts that are adjacent to one

or more of the unconstitutional districts, but which do not contain a piece of any of

the 15 counties found in whole or part within the unconstitutional districts

(districts 55, 96, 97). And there are five districts that are not adjacent to one or

more of the unconstitutional districts, but which do contain a piece of at least one of

the 15 counties found in whole or part within the unconstitutional districts

(districts 21, 56, 65, 82, 84).

The two sets of constraints on narrowly tailoring, and the fact that they do

not perfectly overlap, led me to recommend to the court only maps that confined

their boundary changes to the unconstitutional districts and those districts that

satisfy both a "district adjacency constraint" and a "potentially implicated county"

constraint, i.e. districts that lie in the intersection of these two sets of constraints.

There are 19 districts that are both adjacent to one or more the unconstitutional

ones and also contain a piece of at least one of the 15 counties found in whole or

part within the unconstitutional districts (districts 61, 62, 64, 66, 68, 72, 73, 75, 76,

78, 79, 81, 83, 85, 91, 93, 94, 96, 100).   Thus, there are 30 districts in the

intersection of a "district adjacency constraint" and a "potentially implicated

county" constraint.[1]

However, a careful investigation of redistricting options demonstrates that

the number of districts that need to be redrawn in the 2011 enacted map to

---

[1] There are 38 districts that lie in the union of the "adjacency" and "affected county"
constraint.

effectuate a narrowly tailored constitutional map is considerably lower than 30. In other words, in my view, not all the districts that are both adjacent to the unconstitutional ones and contain portions of counties found within the unconstitutional districts need to be redrawn in order to construct a constitutional remedy that is narrowly tailored. The illustrative maps I propose to the Court change no more than 26 districts, and some combinations of the modularized plans would result in a change in as few as 21 districts.

Because there are potential tradeoffs among traditional redistricting criteria (including tradeoffs between limiting the number of districts that are changed from the 2011 Enacted Map and factors such as minimization of unnecessary county splits or improving compactness), other plan feature comparisons may lead the Court, under the totality of circumstances, to a preference for a remedy that changes more than 21 districts. But, plans that changed more than 26 districts would, in my view, require a compelling factual argument that such additional district changes were needed to create a narrowly tailored constitutional remedy. Such an argument would appear to be contradicted by the illustrative map drawing I have done.[2]

Having reached the view, as a political science expert, that no more than 26 districts need to be changed in order to effectuate a constitutional remedy I cannot recommend any of the five remedial plans submitted to the Court on November 2,

---

[2] After December 7, the parties can, if they wish, offer an argument that more than 26 districts should be redrawn in a court-ordered remedial map.

since each changes from 30 to 33 districts, and four change at least one district not contained in the intersection of "adjacency" and "affected county" constraints identified above. Moreover, each of these plans has other major deficiencies. [3] These other deficiencies are discussed in more detail in Appendix A to this Report.[4]

My goal has been to offer the Court what I view as narrowly tailored illustrative constitutional remedies that are not drawn using race as a preponderant criterion, but in which the African-American community continues to have a realistic equal opportunity to elect candidates of choice in the eleven unconstitutional districts, while also maintaining such an opportunity for the African-American community in district 75. I now turn to the features of the maps I recommended to the Court.[5]

1. The illustrative maps I present to the Court are what I refer to as "modularized"

---

[3] I should note, however, that I have no view about whether or not any of the five remedial plans submitted on November 2 do or do not exhibit a racially preponderant motive, nor would it be appropriate for me, as Special Master, to reach a conclusion about this aspect of a remedial plan, since this requires a legal finding that can only be made by a court. Rather, I seek only to ensure that any plan I recommend to the Court be one that offers a narrowly tailored remedy to the constitutional infirmities found.

[4] However, while these maps were not ones I could recommend to the Court I did examine them further to further inform myself about districting options.

[5] I am deeply indebted to Mr. Jonathan Cervas, Ms. Julie Smith, and Mr. Kent Stigall in providing information about Virginia redistricting, demography and geography; reports on submitted remedial plans, and technical map drawing support for plans constructed under my direction. I also appreciate the assistance of Mr. Amigo Wade in obtaining relevant information and in making available technical assistance from his staff.

maps. To facilitate Court review, and to provide the Court with options for

alternative ways to provide a narrowly tailored constitutional redrawing, I

partitioned the unconstitutional districts into four geographic regions paralleling

those used in the Court opinions and provided ways of redrawing each region that

were compatible with illustrative configurations in other regions. By partitioning

the unconstitutional districts by geography, it is possible to partition the task of line

drawing in multiple smaller separable tasks, involving only one or a few

unconstitutional districts that need to be drawn in each segment. [6] By this

modularization of the redistricting task we can consider alternative plans for each

geographic area that involve redrawing the unconstitutional districts and some of

the adjacent districts taken as a group without concern for the configuration of

districts outside of those in the selected module. The Court can then pick a

preferred remedial plan for each geography, and combine the chosen separate

geographic components so as to create a viable narrowly tailored constitutional plan

for the entire state. The regions are: (1) the Richmond and Henrico area (containing

unconstitutional districts 69, 70, 71, 74), the Petersburg area (containing

unconstitutional district 63), and the Norfolk- Chesapeake- Portsmouth area (

containing unconstitutional districts 79, 80, 89, 90), and (4) the Hampton-Newport

News area, also referenced as the Peninsula (containing unconstitutional districts

---

[6] In the body of the Report I also briefly discuss another way of typologizing
unconstitutional districts in terms of whether they are single or multi-county and
whether, if multi-county, they contain a preponderant county population.

92 and 95). [7] The illustrative remedial plans differ slightly in the way in which each of the geographic modules is drawn. This modularized approach to line drawing also allows the parties and intervenors to comment on how they might propose particular geography be redrawn without forcing a ripple of changes in other geographic areas of the state and/or to express preferences between alternative redrawings in a given area of the state.

I offer to the Court one illustrative module for the Richmond area that has two very minor variations: Richmond 1A and Richmond 1B. These variations differ only in how districts 72 and 73 are treated in the module. One module changes both district 73 and district 73; the other changes just district 73. The reason to consider a change in both districts is that the incumbent locations in these districts are not the same in 2017 as in 2011, and acknowledging that fact can improve overall district compactness without affecting changes in the unconstitutional districts. All of these maps in my view remedy the constitution violation found in districts 69, 70, 71, and 74.

I offer to the Court two illustrative modules for the Petersburg area The first of these has two very minor variations which differ only in how Dinwiddie is treated in the module: Petersburg illustrative module 1A and Petersburg illustrative module 1B. In one variant the Dinwiddie portion of 2011 District 63 is modified

---

[7] In the central portion of the state (the Richmond-Petersburg area) district 62 touches districts 70 and 74 as well as district 63.   In illustrative map drawing, in order to modularize, the configuration of district 62 must be consistent between the Richmond module and the Petersburg module.

slightly so as to improve overall district compactness, and this change necessitates a slight modification of the Dinwiddie portion of District 75. In the other, the Dinwiddie configurations are left completely unchanged. In Petersburg illustrative module 2, more substantial changes are made, affecting change in five districts, rather than only three districts, or only four districts. However, this map provides the best overall compactness. All of these maps in my view remedy the constitution violation found in district 62.

I offer to the Court two illustrative module for the Peninsula area. Newport News-Hampton illustrative Module 1 and illustrative Module 2. These differ in how many districts are wholly drawn within Newport News (one or two), though in both modules district 92 is entirely in Hampton, and district 95 is entirely in Newport News. Each of these maps in my view remedies the constitution violations found in district 95 and district 92.

I offer to the Court one illustrative module for the Norfolk-Chesapeake-Portsmouth area that has three very minor variations: Norfolk-Chesapeake 1A, 1B, 1C. These variations differ only very slightly. One variation changes 10 districts in the area, one changes 9, and one changes only 8. The other differences between these variants are in overall compactness and in the number of distinct county pieces found in the plan. These difference occur in districts adjacent to the unconstitutional districts, with the underlying configurations of the four unconstitutional districts in the area either wholly or essentially unchanged across the variants. All of these maps in my view remedy the constitution violation found

in districts 77, 80, 89, and 90.

2. The plans I drew do not use race as a predominant criterion. As suggested by the *Abrams* decision and many other court cases, a key element of a court adopted plan is that it should be drawn using traditional redistricting criteria. My illustrative remedial maps are each based on the traditional districting criteria identified in U.S. Supreme Court cases and/or the Virginia State Constitution. They also follow the guidelines for addressing issues of unconstitutionality via a narrowly tailored remedy that were laid down in the majority opinion in *Personhuballah v. Alcorn* (Civil Action No. 3:13cv678, January 7, 2016).[8] They begin with counties as units to the greatest extent feasible, and use other large units of census geography for population equalization purposes to the greatest extent feasible, and they reduce the splitting of VTDS from what is found in the 2011 Enacted map.

3. Insofar as districts in my illustrative maps are redrawn with substantial African-American populations, it is because following county boundaries to the extent feasible, when taken in conjunction with the existence of concentrated minority populations in various areas of the state, generated such racial proportions. Unlike what is true for the unconstitutional 2011 Enacted map, the observed minority proportions arise because districts in my illustrative remedial modules are drawn

---

[8] That decision ordered the implementation of a remedial plan for the unconstitutionality previously found in Virginia Congressional District 3 -- with that court-ordered plan to be used in the 2016 election.

following traditional redistricting principles, and not because of any race preponderant motive. Only after traditional districting criteria have been satisfied, did racial considerations enter into my line-drawing, and even then, race was taken into account only for purposes of seeking to assure that there is no violation of the 14th Amendment's Equal Protection provision vis-à-vis changes in the racial composition of the unconstitutional districts that might have inadvertently created racial vote dilution.

4. In my illustrative maps, unconstitutional districts are redrawn centered in the county which provided the predominant population in the 2011 plan, when such a county can clearly be identified.

5. Plans in each geographic area fully remedy identified constitutional infirmities in the districts found unconstitutional, while taking into account equal protection concerns and the need to avoid the potential for violation of Section 2 of the Voting Rights Act with respect to the realistic opportunity of the minority community to elect candidates of choice in those unconstitutional districts (as well as in district 75).

6. The plans are also drawn in a fashion that is blind with respect to partisan outcomes, with partisan data and election outcome data not examined except where needed to avoid minority vote dilution that might inadvertently occur in the two

stage (primary and general) election process if the proportion of minority voting age population is changed in the remedial line drawing process.

7. Changes in the 2011 map are limited to those districts that are adjacent to the unconstitutional ones, and those that contain counties found in the unconstitutional districts, and not all of the districts satisfying these two narrow tailoring factors are changed in order to implement a narrowly tailored remedy. In particular, the illustrative maps that could be constructed from combining my illustrative modules in each of the four geographic regions would change at most 26 districts from the 2011 Enacted map, and there would be a combination of modules from each of the geographic regions that would change only 21 districts from the 2011 Enacted map.

8. Furthermore, the changes made are narrowly drawn in that they are limited to changes that are triggered by redrawing the eleven unconstitutional districts in a constitutional way, and then dealing with the spillover effects on the districts to which they are adjacent in order to satisfy population and geographic constraints. Changes in districts adjacent to an unconstitutional district were not a matter of concern, except with respect to avoiding incumbency pairings, and in terms of following traditional districting criteria. Changes in adjacent districts were made in response to the requirement of eliminating the unconstitutionality in the eleven

unconstitutional districts that is my obligation as a special master.[9]

9. The plans follow the legal guidance provided to me by the Court, with a population deviation in each district under 1%.

10. In each of the four geographic areas of the state, at least one of my illustrative modules is more compact on average on both the Reock and the Polsby-Popper measures than the corresponding districts in the 2011 Enacted map. Indeed, with only two exceptions, all the illustrative remedial modules I propose are as or more compact on average that their counterparts in the 2011 Enacted map on both the Reock and the Polsby-Popper measures. The two exceptions are higher on one of these two measures but lower on the other.[10] One such module has the narrow

---

[9] Since the districts found to be unconstitutional are racially packed, with no compelling justification provided for the high level of minority population in any of them, in reconfiguring the eleven unconstitutional districts in a narrowly tailored and non-race preponderant fashion the process of redrawing will necessarily reduce the minority population proportion within these districts. As a matter of simple geographic logic, this minority population will need to be added to districts adjacent to one or more of the unconstitutional districts, since these adjacent districts are the only districts being changed in my illustrative maps. Thus, the African-American population proportion in some of the adjacent districts will necessarily rise. These changes should positively affect the effective representation of African-American voters in some districts adjacent to the unconstitutional districts, and it is possible that some of the reconfigured districts will now be districts in which the African-American community has a realistic equal opportunity to elect a candidate of choice that was previously denied them. But any such consequences were entirely incidental effects of the redrawing of the unconstitutional districts in a constitutional fashion.

[10] In general, the fewer district boundaries that are changed from an unconstitutional 2011 map that has a low level of compactness in many of its districts, and the fewer counties whose populations are redrawn to be in more

tailoring feature of limiting the changes in the Petersburg area to only three

districts, and a variant of that map that changes four district does increase

compactness as compared to the 2011 enacted map. The other module that is

preferred to the enacted map on only one of the two measures of compactness,

retains the positive feature of keeping two districts wholly in Newport News, but

draws a constitutional rather than an unconstitutional map for the Newport News

district found unconstitutional.

11. The districts in my illustrative maps do not, to the best of my knowledge,

contain any "fracking."[11]

12. The districts in the illustrative maps do not, to the best of my knowledge, pair

any present (2017) incumbents.[12]

        In sum, the illustrative plans/maps in modularized form I have created to

offer for review by the Court are intended to offer possible versions of the eleven

---

accord with traditional districting principles, the more difficult it is to draw a
compact map.

[11] For definition of "fracking," see the text of the Report which also has a map
showing an example of fracking in the 2011 Enacted map.

[12] As part of my extensive exploratory line drawing, I have also been able to draw
constitutional maps following traditional districting principles that do not pair any
2009/2011 incumbents but, since these maps are no longer relevant, I have not
bothered to reproduce them in the Report.

unconstitutional districts that, in my view, remedy the constitutional violation

identified in the majority opinion in *Golden Bethune-Hill v. Virginia* in a narrowly

tailored fashion by following traditional districting criteria in each of the four

geographic areas of the state I have identified, while still avoiding the pairing of

any incumbents.

Information about the key features of each of the illustrative configurations

in each of the four geographic modules is provided in the body of the Report, and

final shape files for each will be made available by the legislative staff of the

Virginia House of Delegates once this Report is filed on December 7. These shape

files also contain the publicly available data on population and black voting age

population in the districts. Election data for each of the districts in each of the

modules is presented in aggregated form in the body of this Report. [13]

Between December 7, 2018 and December 14, 2018, and in the hearing on

January 10, 2019, the parties will have a full opportunity to present to the Court

their comments on the illustrative maps I provide to the Court, and offer

---

[13] The shape files I initially provided to legislative staff for the ten illustrative
remedial modules in four geographic regions inadvertently omitted a few census
blocks which remained unassigned. These few minor errors in the shape files were
corrected by legislative staff pursuant to my instructions after they had
immediately called them to my attention. The corrected shape files are what is
being made available to the Court and to the parties. The maps required only trivial
adjustments to assure population deviations remained under one percent in two
districts, and they do not affect the conclusions stated in this report, even though
these conclusions for my illustrative modules were based on the as yet uncorrected
shape files. While there will be some very minor differences in reported populations
in some of the districts between the corrected shape files and the population
numbers contained in this Report, none are of any substantive significance.

suggestions for ways in which they should be redrawn. If any of the suggestions received pursuant to the December 14 deadline lead me to recommend to the Court a specific reconfiguration of any of the modules, I will inform the Court of that recommendation on or before December 28, and that information will be shared with the parties.

Since I am providing the Court with illustrative options for different geographic areas of the state, I expect that the Court will provide me instructions about the shape of the remedial plan in the four geographic areas of the state where the unconstitutionality exists not long after the Court hearing of January 10, as well as any more detailed instructions about any additional reconfigurations that it wishes to see implemented. With the assistance of legislative staff, I should be able to conduct any needed further map drawing soon after being given these instructions, so that a court-ordered map can be put into place in a timely fashion.

REPORT OF THE SPECIAL MASTER

I. BACKGROUND

1. Pursuant to my responsibilities as a special master in *Golden Bethune Hill v. State Board of Elections*, to assist and advise the Court, I have

(a) reviewed the present (2011) legislative plan for the State of Virginia House of Delegate drawn by the Virginia General Assembly

(b) familiarized myself with the Court opinions in *Bethune Hill v. State Board of Elections*, especially with respect to the majority opinion's identification in its 2018 ruling of constitutional infirmities in the present configuration of the eleven unconstitutional districts. I have also reviewed the 2017 Supreme Court decision that resulted in the case being remanded for rehearing by a three-judge panel.

(c) reviewed basic geographic data for the State (e.g., county and city boundaries), and demographic information on total population and the racial and ethnic composition of population at various levels of census geography, with a focus on areas of the state contained in or adjacent to the eleven districts found unconstitutional.

 (d1) obtained (pursuant to an Order of the Court) technical assistance in map

creation from staff of the Division of Legislative Services of the Virginia State Legislature (Kent Stigall, and Julie Smith) and logistic support from their supervisor (Amigo Wade), each of whom has signed an oath of confidentiality drafted by the Court.

(d2) obtained (pursuant to an Order of the Court) technical assistance in map creation from an advanced to candidacy Ph.D. student in political science at the University of California, Irvine, Jonathan Cervas. Cervas has technical Geographic Information System (GIS) skills. Cervas has also signed the oath of confidentiality required by the Court.

(e) reviewed all of the plans that had been submitted to the Court on or before November 2, 2018 in terms of their suitability as potential remedies for all of the constitutional violations in the 2011 House of Delegates plan identified by the *Golden Bethune-Hill* court. There were five submissions that contained plans and maps that could be analyzed, which I reference in short form as Plaintiff A and Plaintiff B (from the plaintiffs), DI7002 and DI7003 from Defendant Intervenors, (which I sometimes reference simply as 7002 and 7003 for short, since these maps were introduced into the legislature as HB7002 and HB7003), and the map from Virginia State Conference of NAACP Branches, which I henceforth simply label simply as the NAACP map. With the initial exception of the NAACP map, the state legislative staff provided me shape files and data files for each of the five plans so

18

that I had sufficient information on each of the plans to use identical metrics to

describe each.   These are metrics that can be used by the Court to evaluate the

degree to which each offered a narrowly tailored constitutional remedy.   In the case

of the NAACP map there was need for a supplemental submission to clarify district

numbering in the submitted maps before I was able to generate data reports for the

map. With that submission in hand, the NAAP map was given the same status as

the four other submitted remedial maps and given the same review. [14]

 (f) reviewed the response to proposed remedial plans that had been submitted on

or before November 16, 2018 by the parties (and intervenors) in this case.

(g) over the period from October 19-November 16 for Julie Smith and Jonathan

---

[14] There were two further remedial map submissions in time for the Court deadline.
Unfortunately, as I was informed by legislative staff, the two College of William and
Mary student submissions contained too many errors in the allocation of blocks and
other census units to make it possible to create meaningful data reports using the
state legislative system or *Maptitude.* Accordingly, I do not consider these maps in
my Report. There was also a map submitted by the New Virginia Majority as part of
their submission in response to the Court's November 16 response deadline.
Because this map was submitted after the Court's November 2 deadline, and
because it changed 36 districts -- far more than are needed for a narrowly tailored
remedy (see below), I do not consider this map in my Report.   I also had access to
remedial maps publicly posted on the Internet that were created by the non-
partisan Redistricting Project run by Professor Sam Wang at Princeton University.
Because this group did not provide a formal submission to the Court, I do not
consider these maps in my Report. However, because I believe strongly in the
importance of public input into the redistricting process, especially that involving
maps based on traditional (good government) redistricting criteria, even though I do
not provide specific response to any of the maps proposed by these various groups in
my Report, I did briefly examine them for possible useful ideas in remedial line
drawing.

Cervas (and over the period beginning in early November for Kent Stigall) I provided instructions about how to create multiple very preliminary illustrative legislative maps for various geographic areas of the state in an iterative fashion. These plans were created as a basis for exploring multiple options for redrawing the eleven districts in a narrowly tailored and constitutional fashion, avoiding unnecessary county and city splits, and seeking to satisfy other traditional districting criteria. These very preliminary maps allowed me to explore mapping options where avoidance of incumbent pairings was not a consideration.

 (h) in the process of viewing plans submitted to the court on November 2 for purposes of evaluating their suitability for adoption by the Court, I examined the mapping choices offered in the submitted remedial plans to determine if some elements of them might be adopted in whole or in part even if the plan as a whole was judged unsatisfactory. I also reviewed the feedback about submitted plans from the parties and intervenors received by the Court as of November 16. Soon after this latter review had been completed, I revisited my preliminary line drawing exercises in order to take into account any criticisms of submitted plans that I might also find relevant to the drafting of the remedial geographically separated modules I was preparing for the Court.

2. There are a number of different criteria that can be used to evaluate a (legislative) redistricting plan as a whole, or used to evaluate the configuration of

one or more individual districts. These include

(a) conformity to a standard of one person, one vote;

(b) avoiding either fragmentation or packing of geographically concentrated

minority populations that might have the effect or purpose of minimizing or

diluting the voting strength of constitutionally protected minorities, and/or lead to

retrogression in the ability of minority communities to realistically have an "equal

opportunity" to elect candidates of choice;

(c) avoiding use of race as a predominant criterion for redistricting;

(d) avoiding the creation of districts which are divided into two or more

discontiguous parts;

(e) avoiding splits (partition into two or more legislative districts) of long standing

political subunits such as cities or counties,[15] unless these splits become obligatory

or near obligatory by the need to satisfy other criteria such as population equality;[16]

---

[15] In Reports prepared by the State of Virginia's Division of Legislative Services, political entities which are either cities or counties are described as *localities*. Note also that some political entities that have 'city' in the title, such as Charles City, more closely resemble what in other states would be labeled as counties.

[16] As a matter of practicality, one may also wish to minimize splits in what are called VTDs, i.e., the units used to define vote tabulation boundaries. The formation

(f) avoiding unnecessarily ill-compact districts, i.e., ones which are elongated or have irregularly shaped perimeters. [17]

In situation such as that applying in *Golden Bethune-Hill*, where a court is drawing a map to remedy a constitutional infirmity, there are three other   criteria that are relevant:

(g) narrowly tailoring the remedial map so as to avoid changes in existing district boundaries that are not required to create a constitutional map by

(g1) limiting all changes in districts to the districts that are immediately adjacent to the unconstitutional districts;

(g2) minimizing the number of adjacent districts that are redrawn in the process of creating a constitutional map to the extent feasible. Feasibility is determined by a

---

of the boundaries of such units are specified by local jurisdictions for purposes of administrative convenience. And VTDs are frequently redrawn when there are substantial population shifts over the course of a decade. The main reason for avoiding splitting VTDs is simply to avoid inconvenience to localities, but of course, we would also wish to avoid using race as a preponderant factor in the splitting of VTDS.

[17] See below for further elaboration of the two standard tests for compactness used (Polsby-Popper and Reock), which tap the two key different aspects of compactness – giving an area-based and a perimeter-based measure, respectively. These are two measures that were ordered by the Court to be used in creating comparisons across plans/districts.

close examination of the population demography of the areas where unconstitutional districts are found, taking into account the need to avoid minority vote dilution, and the desirability of satisfying traditional criteria of redistricting that are appropriate for a court-imposed map that avoids making race its preponderant criterion (e.g., improving or maintaining overall district compactness, using whole counties and large units of census geography to create districts when this is feasible).[18] Also relevant to narrow tailoring is the identification of the districts not found to be unconstitutional that contain population from one or more of the counties found within the unconstitutional districts, since the redrawing of such counties may be necessary as part of the crafting of a constitutional remedy that is done in accord with traditional districting criteria.

(h) neutrality

A court drawn plan should not be drawn to deliberately either favor or disfavor any political party or point of view.

(i) incumbency pairings

Incumbency protection is not a factor that can be permitted to outweigh the need for creation of a plan that satisfies the U.S. Constitution. I began my explorations of possible remedial maps by paying no attention to incumbencies. My aim was to

---

[18] Traditional districting criteria are also sometimes referred to as "good government" redistricting criteria.

determine the potential for drawing constitutional maps that satisfy traditional

districting criteria and provide a narrowly tailored remedy for the constitutional

violations found. Only after I had drawn such illustrative maps did I begin to

consider incumbency to ascertain whether constitutional maps drawn according to

the same principles as my initial illustrative maps could be adapted to also avoid

incumbency pairings.   Thus, incumbency was the last factor I took into account,

and I examined modifications of my initial illustrative maps to see if they could be

adapted to avoid incumbent pairings without jeopardizing the narrowly tailored

removal of constitutional infirmities in the eleven districts found to be

unconstitutional that had been achieved in those initial illustrative maps.

3. Recommendations re the five analyzable remedial plans submitted pursuant to

the Court's November 2 deadline

As noted earlier, there were five submissions pursuant to the Court's November 2

deadline that contained plans and maps offered as remedies which had sufficient

information provided for me to evaluate them with respect to the relevant criteria

discussed in the body of my Report. I reference these as Plaintiff's A and Plaintiff's

B (from the plaintiffs), DI7002 and DI7003 from Defendant Intervenors (maps

which were first introduced into the legislature), and the map from   Virginia State

Conference of NAACP Branches, which I henceforth simply label simply as the

NAACP map.

The five complete plans/maps offered pursuant to the Court's November 7 deadline are, in my view, fatally flawed by not offered a fully narrowly tailored remedy for the constitutional infirmities in the set of eleven districts found to be unconstitutional instances of race preponderant gerrymandering in that they either modify some legislative districts that, demonstrably, did not need to be changed to deal with the constitutional problems identified (e.g., reconfigurations of more districts than was needed for remedial purposes, or redrawing districts that were not adjacent to the unconstitutional districts) and/or they failed to satisfactorily address the constitutional infirmity in some of the unconstitutional districts in a narrowly tailored fashion.

I discuss in the Appendix to this report the reasons why I cannot recommend to the Court any of the submitted remedial maps. However, while I cannot recommend the adoption of any of the plans in their present form, I have reviewed the features of each of these submitted proposed remedial maps with an eye toward improving my own understanding of map making possibilities, especially vis-à-vis ways to draw constitutional maps in particular geographic regions of the state.

4. Priorities

(a) Having evaluated the submitted remedial maps and determining that I could not recommend any of them to the Court it became necessary to provide illustrative

maps of my own to the Court, indicating ways in which a constitutional map could

be drawn. In drawing illustrative maps for consideration by the Court that in my

view could serve to remedy the constitutional infirmities identified in the 2018

majority opinion in *Golden Bethune-Hill v. Virginia State Board of Elections*, Civil

Action No. 3:14cv852, I have sought to take into account all of the criteria

enumerated above. In general, however, there are tradeoffs among the various

criteria. In practice, when there are so many distinct criteria to be balance off

against one another, it may be impossible to satisfy all criteria fully. For example,

strict adherence to a population equality standard may lead to the necessity to split

some political subunits, while undue deference to existing district lines may lead to

either fragmentation or packing of minority voting strength.   And the more

districts that are changed, the easier it may be to avoid county splits in the set of

changed districts, and thus in the plan as a whole.

(b) The first three of the criteria listed in Section 2 above, 2.(a), 2.(b), and 2.(c), I

treated as of highest priority since they are grounded in provisions of the U.S.

Constitution, as these have been interpreted by the U.S. Supreme Court. However,

because the indicia used by the majority in the *Golden Bethune-Hill* opinion to infer

predominant racial motive included district boundaries that picked up pockets of

minority population in a fashion that did not appear in any way compelled by the

demography of the state, including ones that required unnecessary split of

county/city lines (or VTDs) in a way that appeared linked to race, and because

compactness and contiguity are referenced in the State Constitution, I was

especially attentive to issues of contiguity, [19] compactness[20] and avoiding splitting of

existing political subunit boundaries within the district in drawing my illustrative

remedial configurations of the unconstitutional districts.[21] I have also treated the

---

[19] Contiguity of legislative districts is required by the Virginia constitution (Article II, Section 6). For redistricting, the standard (mathematical) way to define contiguity is in terms of the ability of voters to move from any one part of the district to any other part of the district without leaving the district, i.e. the district should not consist of multiple geographically separated parts. Special issues of interpretation of this definition of contiguity arise when district boundaries include substantial bodies of water in whole or in part and district contiguity is established over an area of water, especially when the water in question is adjacent to more than one district. In such cases, sometimes contiguity is interpreted in pragmatic terms as connection from any land part of the district to any other land part of the district via land, bridge or tunnel. Alternatively, when the boundaries of political, voting, or census units encompass water areas along with land areas, contiguity by water might also be established when legal boundaries touch, even if the areas that are joined in this way have water at each edge of the boundary. In Virginia, contiguity has also been interpreted as occurring when there is a direct line of sight connection over a body of water between two pieces of land. But the interpretation of contiguity by water has sometimes been controversial, and even the general notion of contiguity can be interpreted in more than one way and is complicated by how the U.S. Bureau of the Census allocates portions of rivers and lakes to different census blocks, and how it deals with islands.

[20] Compactness is a criterion that is identified in Article II, Section 6 of the Virginia Constitution: "Members of the House of Representatives of the United States and members of the Senate and of the House of Delegates of the General Assembly shall be elected from electoral districts established by the General Assembly. Every electoral district shall be composed of contiguous and compact territory and shall be so constituted as to give, as nearly as is practicable, representation in proportion to the population of the district." There are multiple ways to define/operationalize the concept of compactness (see discussion below).

[21] Avoiding the splitting of counties or cities is a traditional districting criterion that has been referenced in many U.S. Supreme Court cases dealing with districting, including *Mahan v. Howell* 410 U.S. 315 (1973). While that case dealt with population inequalities and there have been newer cases clarifying appropriate population equality for legislative districts, in that case the Court also acknowledged the position of the State of Virginia that counties had a special

eighth criterion, neutrality, as a necessity in a court-adopted plan.

I treated incumbency protection as the least important of the criteria I took into

account. However, I was nonetheless able to create maps to remedy the

constitutional violations that avoided the pairing of any 2017 incumbents in terms

of their home addresses.

---

status re legislative redistricting in that: "Under Art. VII, §§ 2 and 3 of Virginia's
Constitution, the General Assembly is given extensive power to enact special
legislation regarding the organization of, and the exercise of governmental powers
by, counties, cities, towns, and other political subdivisions;" and the Court majority
also asserted that "respecting the boundaries of political subdivisions" is a
"rational state policy" (at 323-4). The Virginia legislature in 2011 also identified
counties as one indicator of community of interest, but listed it as one among many.
"Communities of Interest Districts shall be based on legislative consideration of the
varied factors that can create or contribute to communities of interest. These factors
may include, among others, economic factors, social factors, cultural factors,
geographic features, governmental jurisdictions and service delivery areas, political
beliefs, voting trends, and incumbency considerations. …The discernment,
weighing, and balancing of the varied factors that contribute to communities of
interest is an intensely political process best carried out by elected representatives
of the people. Local government jurisdiction and precinct lines may reflect
communities of interest to be balanced, but they are entitled to no greater weight as
a matter of state policy than other identifiable communities of interest."
(http://dls.virginia.gov/pubs/redist/2011Draw1.pdf)

Since counties (and cities) represent identifiable communities of interest, my focus
in the constitutional redrawing of the eleven districts was on the maintenance of
county (or city) boundaries, since this was the only straightforward and
indisputable indicator of communities of interest available to me.   Between
December 7, 2018 and December 14, 2018, and in the hearing on January 10, 2019,
the parties will have a full opportunity to present to the Court community of
interest arguments for why some counties should be split into additional pieces
than is the case in the illustrative maps I offer to the Court, or why some areas
within particular counties should be redrawn in these maps.

III. Operationalization of Districting Criteria for Purposes of Comparing Plans

1. I now discuss briefly, and in the abstract, how I measured compliance with each

of the nine criteria with respects to potential remedial plans.

(a)   population equality

Since the present map and all of the maps offered in briefs submitted on or before

November 2 specified district configurations which were within one percentage

point of ideal district size, [22] and this level of population equality had been

previously achieved by the State of Virginia, the illustrative maps I have offered to

the Court also provide this level of strict population equality.   This population

equality standard ensures population equality consistency across all of Virginia's

House of Delegates' districts, and was mandated by the Court.[23]

---

[22] These population values are based on the 2010 Census. In 2018, because of births,
deaths, and migration in and out of the districts, the 2010 census figures can only
be regarded as approximations to the present population in the legislative districts
in Virginia.   Nonetheless, the 2010 Census still provides what is unquestionably
the best information now available about Virginia's population demography, and is
the appropriate data to use. In fact, it is the only data we could use that can be
projected down into units of census geography.

[23] In other jurisdictions with a different factual background, previous redistricting
decisions of the U.S. Supreme Court indicate that state legislative plan with greater
than a plus or minus one percentage point deviation from ideal may also be
constitutional. Except for special circumstances involving a finding of boundary
manipulations (see *Larios v. Cox* 300 F.Supp.2d 1320 (N.D. Ga. 2004), summarily
affirmed by the Supreme Court) a plus or minus five percent total population
deviation has generally been regarded as acceptable for state legislative maps, even

(b) equal protection, the realistic opportunity of a minority community to elect candidates of its choice, i.e., to create what is sometimes referred to as a "minority opportunity district" or a "minority opportunity to elect" district.

i. the demography and geography of equal protection

a. In seeking to reach a professional judgment as a political scientist specialist on redistricting concerning the realistic opportunity for the minority community to elect candidates of choice – an analysis required by Section 2 of the Voting Rights Act, as well as for the closely related questions of minority fragmentation or packing, a necessary starting point is a review of the demography and geography of the State of Virginia. This review should encompass both the unconstitutional districts and areas of the state proximate to them, including districts adjacent to those districts and districts containing counties that are found in whole or in part within the unconstitutional districts.

b. In conducting my review of the racial demography of the State in the areas near the unconstitutional districts, it became clear that there were substantial minority

---

though such a deviation would be completely unacceptable for congressional districting.

30

population concentrations in counties such as Richmond, Henrico, Petersburg, Hampton, Newport News, Norfolk, Portsmouth and Chesapeake. And it also became clear that, even within counties, there was substantial heterogeneity in racial demography. For example, eastern Henrico has very substantial African-American population while western Henrico is generally heavily white in demographic composition. Similarly, in Richmond, the western portion of the county, especially the northwest corner, is heavily white, while other portions of the county have very substantial African-American populations. And similar difference of racial geographic concentration arise in the eastern portion of the state both across counties and within-counties.

c.   In Golden Bethune-Hill we unconstitutional districts are ones where there is a previous history of minority electoral success, but where race has been made the preponderant factor in the redrawing of district lines. In many of the unconstitutional districts black population from adjacent districts have been added to districts in which there was already minority success under a previous plan, and/or white population removed. Under these circumstance, it is inevitable that a narrowly tailored remedy plan will, with near certainty, reduce the black voting age population percentages in many if not all of the districts found to be unconstitutional. And concomitantly such a reduction in the minority population in the unconstitutional districts will, as a mathematical necessity, lead to an increase in the minority population in some of the districts adjacent to those found to be

unconstitutional.   These changes should positively affect the effective representation of African-American voters in some districts adjacent to the unconstitutional districts. It is also possible that some of the illustrative reconfigured districts adjacent to the unconstitutional districts will now be districts in which, even though not majority African-American in their voting age population, the African-American community has a realistic equal opportunity to elect a candidate of choice that was previously denied them. But, in my illustrative maps, any such consequences were entirely incidental effects of the need to redraw the unconstitutional districts in a constitutional fashion.

ii. In redrawn unconstitutional districts, in addition to demography, the second essential element in considering the potential to create a "minority opportunity to elect" district involves the study of elections in the relevant areas of the state.

a. In looking to specify the set of elections that it useful to analyze, there are several principles of "best practice:" [24]

---

[24] For further discussion of this and related issues see Grofman, Bernard, Lisa Handley and Richard Niemi. Minority Representation and the Quest for Voting Equality, (Cambridge Univ. Press, 1992). While the discussion of voting rights case law in this work is completely outdated, the technical discussion of statistical tools for use in the voting rights context remains relevant.

a1. The elections analyzed should be ones where a viable minority candidate is a contestant.[25] Usually we examine election results involving contests where there are both minority and non-minority candidates, and where there is a least one viable candidate of each race.[26] Information can, however, also be gleaned from contests where only minority candidates are involved, or where there is an election involving a minority candidate in which that candidate wins uncontested.

a2. The elections analyzed should be recent.

a3. The elections analyzed should be in the parts of the state where the proposed remedial district or districts are to be created or, if the election being analyzed is statewide, it needs to be possible to report results of that election for areas of the state that (in whole or part) comprise actual or hypothetical districts, i.e., what are commonly called "recompiled" elections. The nature of the districts sufficient to provide the minority community a realistic opportunity to elect candidates of choice can vary across different areas of a state. Looking at data on "recompiled" elections across different potential districts allows us to take into account local variations in voting behavior and demography.

---

[25] Looking at contests where there is no minority candidate can be misleading if white voters are less likely to vote for a minority candidate of a given party than they are to vote for a non-minority candidate of that same party.

[26] Election results where candidates of one race are not viable can be misleading if projected into contexts where we might expect there to be viable candidates of more than one race. However, essentially uncontested contests can still be useful sources of information.

a4.   The elections analyzed should be of the same or very similar type as the type of elections at legal issue. Here the key distinction is between partisan and non-partisan elections: Partisan elections offer voters a partisan cue, and are more likely to trigger partisan attitudes and loyalties on the part of voters to the candidate of whichever party they are most attached to. Another difference is that partisan elections are typically a two stage process in which there is a contest for party nomination and then a general election.

a5.   If elections are of a partisan nature, then the realistic analysis of potential to elect minority candidates of choice must consider both the likely outcomes at the primary election phase and at the general election phase of the election process. To put it simply: in a partisan election contest, to win, you must first be nominated (in a party primary) and, once nominated by a party, be able to go on to win the general election.[27]   Thus while for all elections, for voting rights purposes, analyses must be

---

[27] A more formal way to express this insight is in terms of what statisticians refer to as the *Law of Conditional Probability*. That Law states that the probability of the joint outcome (A and B) equals the probability of the outcome A if the outcome B has occurred, multiplied by the probability of obtaining the outcome B. In the partisan election context, what this means is that the probability of a (minority) candidate of choice of the minority community being elected is the product of the probability that a (minority) candidate of choice of the minority community wins the general election if that candidate is the nominee of a given political party multiplied by the probability that a (minority) candidate of choice of the minority community wins the primary of that party, summed over all parties.

attentive to the (expected) racial composition of the districts; for partisan contests it is important to be attentive to the expected racial composition of the electorate at both phases of the election process, primary and general.

a6. Analyses should be attentive to whether or not there is an incumbent in the election contest, and to the race or ethnicity of that incumbent and, for partisan contests, they should be attentive to the party of the incumbent.

b. My review of the potential for (continued) minority electoral success in in evaluating proposed remedial maps, and comparing the present plan to the illustrative districts I have drawn I draw on these principles of best practices in evaluating minority voting equality issues.

b1. I have looked at contests involving an African-American candidate;

b2. I have looked at recent elections, with the oldest from 2012 and some considerably more recent;

 b3. I have looked at contests taking place in the area of the state where there is substantial black population in or proximate to the districts found to be unconstitutional;

b4. I have looked at general election contests that are partisan in character;

b5. I have looked at both primary election contests and general elections;

b6. I have been attentive in my analyses to whether or not there was an incumbent in the contest and to the party of that incumbent.

b7. I have been attentive to what we can learn from compiled elections about potential legislative elections within the same geography.

c. specific data reviewed with respect to equal protection issues

c1. I have reviewed data on general elections and Democratic primary elections in 2016 and 2018 in Congressional District 3 and Congressional District 4 as these district were reconfigured to be used in the 2016 election. In both 2016 and 2018, the elections in Congressional District 3 and in Congressional District 4 resulted in the election success of an African-American candidate despite the fact that the black voting age population   in each of these districts, after they had been reconfigured following the *Personhuballah* litigation, was well under 50%: 48% in current CD3 and 42.7% in current CD4. In 2016, Representative Scott was re-elected with 66.7% of the vote, and Mr. McEachin was elected with 57.7% of the vote. In 2018, Representative Scott was re-elected with 91.2% of the vote and Representative McEachin was re-elected with 62.6% of the vote.   I would call

particular attention to the fact that Mr. McEachin was not the incumbent at the time of his initial election in CD4.

In the Democratic primary election in 2016, in the newly reconfigured Virginia congressional district 3, the incumbent, Representative Scott, was uncontested in the Democratic primary. In the Democratic primary election in 2016, in the newly reconfigured Virginia congressional district 4, where there was no incumbent, the only candidates in that primary were African-American, with A. Donald McEachin the overwhelming winner in that primary. Both won in the 2016 general election. In 2018 both the Democratic primary in CD3 and that in CD4 went uncontested and both African-American incumbents went on to win the general election.

These election results provide what I view as compelling evidence that, in the regions of the state where the eleven districts found unconstitutional are located, it may not be necessary to have districts with black majorities in order to allow the African-American community a realistic equal opportunity to elect candidates of choice.

C2. I have reviewed legislative election data on general elections in the unconstitutional legislative districts in 2017 and 2015. In all of these elections, in 2017, the candidate of the Democratic party, a candidate of choice of the African-American community, is uncontested in the general election.

c.   For studying the realistic opportunity of an African-American candidate of

choice to win elections in different legislative district configurations and in both

primary and general elections, I have also made use of statewide election data at

the voter tabulation unit (precinct) level to create a "recompiled" election within any

given proposed legislative district in the State. In particular, I examined

projections into illustrative districts of the Obama vote in the 2012 general election,

and the Fairfax vote in the 2013 Democratic primary to select a Democratic Party

candidate for Attorney General of the State of Virginia   These are both biracial

contests.

c1. In the 2012 contest President Obama was an incumbent; while he was not an

incumbent in 2008. However, the choice of the 2012 election rather than the 2008

one is still a conservative one for assessing the likelihood of success of a minority

candidate in a reconfigured district in that, in general, in the relevant parts of

Virginia Mr. Obama's support was higher in the general election in 2008 than in

2012 – though the differences are not great.[28]

c2. In the 2013 Attorney General Democratic primary the African-American

candidate, Justin Fairfax, was not an incumbent, and his principal opponent was a

---

[28] In accord with best practices, since we are now at the remedy phase of this case, it is appropriate to make use of relevant election data for elections closer to the present even though that data was unavailable in 2011, since these more recent elections may be more indicative of contemporary voting patterns.

white candidate with a strong background who went on to win the Democratic primary, statewide, and to subsequently be elected Attorney General of the State of Virginia. Looking at the Fairfax vote share in a statewide contest recompiled within a (new) district boundary is a conservative estimate of potential minority support in a Democratic primary, since a minority candidate residing locally with some degree of name recognition within the much smaller confines of a legislative district could be expected to win more votes (likely, considerably more votes) in the Democratic primary in the district that what was obtained by Mr. Fairfax. [29]

c3. Similarly, we expect that a minority incumbent, especially one who had been elected more than once, would win more votes in the Democratic primary in the district than did Mr. Fairfax, almost certainly considerably more votes. Focusing on the unconstitutional districts, we see that, in the Richmond area there are very long-time incumbents in districts 69, 70, and 74 and an incumbent elected in district 71 in a special election in February 2017. In district 63 the incumbent from Petersburg was first elected in 2015. In the Norfolk-Portsmouth area, the incumbent in district 77 was elected in a special election in 2016; in district 80 there is a very long-time incumbent; in district 89 the incumbent was first elected in 2017, and in district 90 you have an incumbent first elected in a special election in

---

[29] The only likely exception to this observation is the legislative district in which Mr. Fairfax has his own home.

2014. In the Hampton-Newport News area, in district 92 you have a very long-time incumbent; in district 95 you have an incumbent first elected in 2015.

iv. minority cohesion and cross-over voting

a. The likelihood that a minority candidate of choice will win an election depends in part and upon the degree of cohesion of minority voters in their voting support for the minority candidate of choice, and the willingness of non-minority voters to vote for the candidate of choice of the minority community   (what is often called "cross-over voting"). The level of minority cohesion on the one hand, and cross over voting by non-minority voters, on the other, is captured by the measurement of the level of what is called in the redistricting literature *racially polarized voting* (a.k.a. *racial bloc voting* (RBV)), a measure of the degree to which voting patterns can be predicted largely on the basis of the race of the voter.   As noted in my Special Master Report in Personhuballah: "*Ceteris paribus*, high levels of minority political cohesion and substantial levels of white cross-over voting make it much more likely that a minority candidate of choice has a realistic opportunity to be elected, even in contests in Virginia where voting is polarized along racial lines, as long as minority population is large enough to allow for a party nomination and subsequent election with cross-over support from non-minority supporters of that party."

b. I have reviewed the Report of Dr. Bradley Palmer, the only expert witness

testimony in this case that I am aware of that provides statistical evidence about

the level of racially polarized voting in the various districts in the 2011 legislative

plan that were found to have been unconstitutionally drawn. I am reviewing that

portion of the expert witness testimony from Dr. Palmer solely for the limited

purpose of assessing, from a social science perspective, proposed reconfigurations in

terms of evidence offered about levels of racial bloc voting in different parts of the

state. [30]   While Dr. Palmer's analyses deal with racial bloc voting patterns in the

2011 unconstitutional districts,[31] his conclusion that a 55% black voting

population, or even a 50% black voting age population, are not required in some

areas of the state in order to draw districts in which minorities have a realistic

equal opportunity to elect candidates of choice is the same as what I have reached

through my own independent analyses.

c3. I have also reread and reviewed a portion of the Report of Dr. Lisa Handley in

Personhuballah, attached as an appendix to a Brief submitted by the Governor of

---

[30] While I have read other expert witness reports in this case, and the discussion of
these reports and trial testimony in the *Golden Bethune-Hill* opinions, I will not
discuss the debate about the credibility/relevance of expert witness testimony
offered by experts for plaintiffs or defendants about the issue of whether race had
been the preponderant motive in 2011 line drawing in particular districts, since this
debate is irrelevant to the remedial line drawing task set me as Special Master. The
legal issues relevant to those concerns have already been decided by this Court in
the 2018 majority opinion written after Supreme Court remand of the case.

[31] Palmer's Report also presents racial bloc voting analyses of district 75, a district
that was subsequently held not to have been drawn in an unconstitutional fashion.

Virginia in that case in 2015. Dr. Handley analyses recompiled elections in the

areas in what was Congressional District 3 in the 2011 Virginia congressional map.

These areas correspond to geography now largely included in either Congressional

District 3 or Congressional District 4 in the 2016 congressional map for the state

ordered by a federal court, and thus to much of the geography in which the eleven

unconstitutional legislative districts are located in whole or in part. Dr. Handley's

analyses provide further confirmation of the claim that a 55% black voting

population, or even a 50% black voting age population, are not required in some

areas of the state in order to draw districts in which minorities have a realistic

equal opportunity to elect candidates of choice.[32]

---

[32] As I stated in the Report of the Special Master in Personhuballah, "Dr. Handley's analyses of particular biracial elections demonstrate that, in the boundaries of CD3 as it existed in 2011, black voters were almost perfectly cohesive in their voting behavior (giving an average of over 97% of their votes to a particular candidate (the Democrat) in partisan statewide and congressional contests. However, even when whites and blacks support different candidates, a substantial proportion of white voters vote for the minority candidate of choice.   For example, Dr. Handley finds that, in the geography specified by the 2011 version of CD3, a (bare) majority of white voters supported Barack Obama in the 2012 presidential general election, while white support for him in the 2008 general election within the 2011 boundaries of CD3 was also high, somewhere between 43% and 46%   (see Table 5 in her Report).   Even in the 2008 Democratic primary election she estimates projected white support for Obama in the 2011 geography of CD3 was 60.1%. In the 2013 primary election for the Democratic Party nomination for the Office of Attorney General, where white cross-over voting was lower, she still estimates that at least 32% of the white voters in that primary located in the boundaries specified by the 2011 version of CD3 cast a vote for Justin Fairfax, the African-American candidate (Handley Report, p. 13)."

c4. It is my professional judgment that Professor Bradley's analyses and those of Dr. Lisa Handley make use of standard and well accepted social science tools for assessing levels of racial bloc voting, and that each has used those tools in a competent and professional manner. However, I make use of this work only to provide supporting evidence to complement the analyses I have done on my own. Dr. Handley's conclusions are based on projections into hypothetical congressional districts, and Dr. Palmer's conclusions are based on projections into unconstitutional districts in the enacted map -- in both cases districts which are different from those in the give submitted remedial plans or in my illustrative legislative remedy plans. Accordingly I have examined recompilations of the Obama and Fairfax votes directly into the actual proposed remedial districts. Such remedial district-specific projections provide a better intensely local appraisal of "minority opportunity to elect," namely one that implicitly takes into variations across different parts of the state in minority voting percentages, in minority level of cohesion, and in the level of white cross-over voting.

v. opportunity to elect

 a. The combination of my examination of racial demography and of recompiled elections involving bi-racial contests, in conjunction with my examination of actual past election outcomes in the unconstitutional districts allows me to assess the potential for the minority community's "equal opportunity to elect" in redrawn

43

versions of each of the unconstitutional districts, and to examine the potential the

potential for retrogression in the opportunity of the minority community to elect

candidates of choice in the unconstitutional districts in the configurations of these

districts offered in the illustrative remedial plans I have drawn. Moreover, along

with the geographically rooted analyses I have done, they allow me to address the

question of narrow tailoring with respect to minority equal opportunity to elect.

b1. A claimed justification offered by some individual Virginia legislators for the

way in which the districts found to be unconstitutional were configured, was that

only a district with a 55% black voting age majority could provide African-American

voters with a realistic opportunity to elect candidates of choice. That assertion was

rejected in the *Golden Bethune-Hill* majority opinion. As the opinion notes, the 55

percent value is unsupported by empirical evidence presented at the time of its

adoption, and it fails to acknowledge key differences in racial bloc voting patterns in

different parts of the state. Moreover, in my review of the Briefs submitted in the

remedy phase of case, I find no empirical evidence presented that would support

the conclusion that a 55% black voting age population is needed to assure the

African-American community a realistic opportunity to elect candidates of choice in

any (much less all) of the eleven districts found to be unconstitutional.

b2. As noted above, my own analyses specific to the unconstitutional legislative

districts demonstrate that the claim that a 55% minority voting age population is

always needed in a district to assure African-American voters a realistic

opportunity to elect candidates of choice is, factually, flatly wrong. Indeed, to the

contrary, a lower African-American voting age percentages will permit narrowly

tailored remedies in all of the legislative districts found to be unconstitutional. [33]   I

have reached this empirical conclusion by my own independent conceptual analyses

of the basic elements of elections, such as the two-stage nature of partisan contests,

and by my own independent empirical analyses of demographic and electoral data

from Virginia, especially that in recompiled bi-racial elections in specific illustrative

remedial districts.

c. avoidance of mechanical tests

c1. As the Supreme Court has made clear in recent cases, when judging whether a

redrawn district continues to offer an equal opportunity to elect minority candidates

of choice, maintenance of existing levels of black population or voting age population

is not required as long as there can be a strong demonstration of a continued equal

opportunity to elect. [34]   There is no single "magic" number vis-à-vis black

---

[33] Even in district 75, where the Court failed to find unconstitutionality in that
district as it was configured in 2011, my exploration of redistricting alternatives has
demonstrated to my own satisfaction that, in a slightly reconfigured district 75,
black voting age population percentages lower than 55 percent would still be
sufficient to maintain that district as a realistic opportunity to elect district.

[34] In *Alabama Legislative Black Caucus,* the Supreme Court specifically rejected
reliance on "a mechanically numerical view as to what counts as forbidden
retrogression" *Id.* at 1273–74. It asserted that retrogression "does not require a
covered jurisdiction to maintain a particular numerical minority percentage," but

population or voting age population that will be needed to provide for the African-American community a realistic opportunity to elect candidates of choice. Rather what is required is an intensely local appraisal.

c2 . I would emphasize that, in my line drawing, I have not ever sought to achieve any particular predetermined percentage of black voting age population within a district, but rather have drawn districts in accord with traditional districting principles and then afterward checked to make sure that unintentional vote dilution was not present. Essentially, what I found in my exploration of alternative mappings, including those submitted as remedial plans to the Court, is that there were always ways, sometimes rather obvious ones, to redraw unconstitutional districts so as to better preserve counties and improve compactness without minimizing or canceling out the voting strength of any protected group, which involved lower (sometimes substantially lower) African-American voting age populations than what are found in the unconstitutional districts in the 2011 Enacted map.

c3. The African-American share of voting age population varies across unconstitutional districts in the redrawn illustrative versions of the eleven unconstitutional districts I am presenting to the court. One reason for that

---

instead "requires the jurisdiction to maintain a minority's ability to elect a preferred candidate of choice." 135 S. Ct. at 1272 (2015).

variation is differences in the degree of geographic concentration of the African-

American voting age population in different counties and different geographic areas

of the state. I did not find it necessary to seek to determine the absolute <u>minimum</u>

percentage of African-American voting age population needed to create an

"opportunity to elect district" for minority voters in particular areas of the state,

since my illustrative versions of the unconstitutional districts are already narrowly

tailored to remedy the constitutional violation found in them. To reiterate, the

process of line drawing I engaged in was to draw remedial districts using traditional

districting criteria, and only then to check (based primarily but not entirely on

recompiled elections with minority candidates) that the district was one whose new

minority population percentage did not, in my view, involve a denial of equal

protection.

d. role of primaries

d1. As noted earlier, analysis of the "opportunity to elect" must take into account

both the primary election and the general election, since both must be won.   As I

stated in my Special Master Report in *Personuballah*, *ceteris paribus*, "voters who

vote for Democratic (Republican) candidates in general elections are more likely to

vote in the Democratic (Republican) primary than those who do not support

Democratic (Republican) party candidates in general elections, if they do vote in a

party primary. Because African-American voters are more likely to vote Democrat

than Republicans in general elections, while white voters are considerably more

likely to be Republican voters in general elections than is the case for African-American voters, *ceteris paribus*, the expected proportion of African-American voters is going to be higher among voters in Democratic primaries than the proportion of African-American voters among all voters in a general election. Conversely, the expected proportion of white voters is going to be lower among voters in Democratic primaries than the proportion of white voters among all voters.["35]

d2. Given the demography and geography of the State of Virginia, it is my professional judgment that the most appropriate way to remedy the constitutional violation identified in the 2011 plan is to replace the present unconstitutional districts with contiguous equipopulous districts with fewer city or county splits than

---

[35] This general theoretical conclusion is reinforced by the relevant expert witness testimony of Dr. Lisa Handley offered in *Personhuballah* about compiled elections in the Richmond, Newport-News and Norfolk areas of the state. As noted in my Special Master Report in *Personhuballah,* she finds clear support for the expectation that black voters would be overrepresented among the voters in Democratic primaries in Virginia relative to the overall African-American share of the potential electorate (those of voting age) is confirmed by Dr. Handley's analyses. For example, she finds that, in the Democratic primary for U.S. President in 2008, blacks "opted to vote in the Democratic primary at a much higher percentage than whites did: approximately 18% of the black voting age population compared to approximately 11% of white voting age population cast a vote in the Democratic Primary in 2008" (Handley Report p.11). As she correctly notes: "The implication of this analysis is that "the percent black voting age population needed to produce an effective black district tends to be lower for Democratic primary elections than for general elections" (Handley Report p.11). *Ceteris paribus*, this finding clearly indicates that there can be a realistic opportunity for a minority candidate of choice to win the Democratic Party nomination even in a district that, overall, is less than majority black (majority minority) in voting age population.

are found in the 2011 plan and with at least as high average level of compactness.

As discussed above, such remedial districts can be drawn with a substantial

minority population that is sufficient to provide minority voters an equal

opportunity to elect candidates of choice. Doing so does not require that the district

have a black voting age majority. Rather it requires that voting be such that, when

the African-American community votes in a cohesive fashion, a candidate of choice

of the minority community can be expected to have a realistic opportunity to win

both a primary and a general election -- with success in the general election

occurring because the minority candidate of choice wins the support of white voters

who share that candidate's partisan preferences (i.e., the minority candidate of

choice receives some white "cross-over" voting support). The illustrative remedial

districts I have drawn satisfy these conditions.

 (c) not making race the preponderant factor

As I have emphasized throughout this Report, the process of line drawing I engaged

in was to draw remedial districts using traditional districting criteria, and only then

to check (based on recompiled elections with minority candidates) that the district

was one whose minority population did not raise issues of equal protection. In

reviewing other plans for compliance with this criteria I looked to at factors such as

how many counties were split and in how many pieces, and did the choice of black

voting age population in the district suggest narrow tailoring.

(d) contiguity

(d1) In general, I sought to maintain contiguity by land rather than by water. In particular, in the Norfolk and Hampton portion of the state, when I redrew districts I redrew the unconstitutional districts either wholly North or wholly South of the James River/ Hampton River.[36] With respect to other water bodies, I have sought to assure contiguity in terms of census defined units of geography. The census often assigns portions of rivers and other water bodies to separate census blocks.

(d2) Discontiguity is normally only considered a legal issue if it applies to a district being itself divided into discontiguous pieces. However, as a specialist on redistricting it is my view that redistricting plans in which two or more discontiguous pieces of some political jurisdiction are found within a single district are either evidence of poor redistricting practices or indicators of gerrymandering. While there is no present name in the redistricting literature for districts that include discontiguous pieces of the same city or county, I have coined the term "fracking" to refer to the creation of such districts, since fracking creates fissures in the earth. This term has the advantage of creating a parallel usage to three standard terms of the redistricting literature that identify tools for gerrymandering: "packing," "cracking," and "stacking." The 2011 map includes a number of districts with this type of discontiguity, and this *fracking* feature is found in at least 4 of the 11 unconstitutional districts (district 63, in Hopewell City; district 70, in

---

[36] With the exception of district 100, which I did not change from the 2011 Enacted map, the redrawn districts in the Peninsula are drawn north of the river, and those in the Norfolk are

Richmond; district 90 in Virginia Beach; and district 95, in Newport News).[37]

Within these unconstitutional districts in the 2011 enacted map, the discontiguous

pieces are, ones of higher black population, often considerably higher black

population, than the nearby piece or pieces of the fracked county contained in

districts that are not unconstitutional.

(d3) Except for the rare case where a city or county itself is legally defined as

consisting of discontiguous pieces, a well drawn redistricting map completely

_____

[37] We can illustrate fracking discontinuity with a Hopewell example from the 2011 enacted map. There are two discontiguous pieces of Hopewell City placed by the 2011 Enacted map in district 63. They have an average black voting age population of (BVAP) of 65%, with one piece having a BVAP of 71.58% and the other having a BVAP of 65.45%. In contrast, the piece of Hopewell City (the remainder of the city) that is located in district 62 has a black VAP of only 20.27%. The map below illustrates this fracking, with yellow indicating District 63, District 62 in green, and 64 in black; with broken lines showing city and county boundaries.
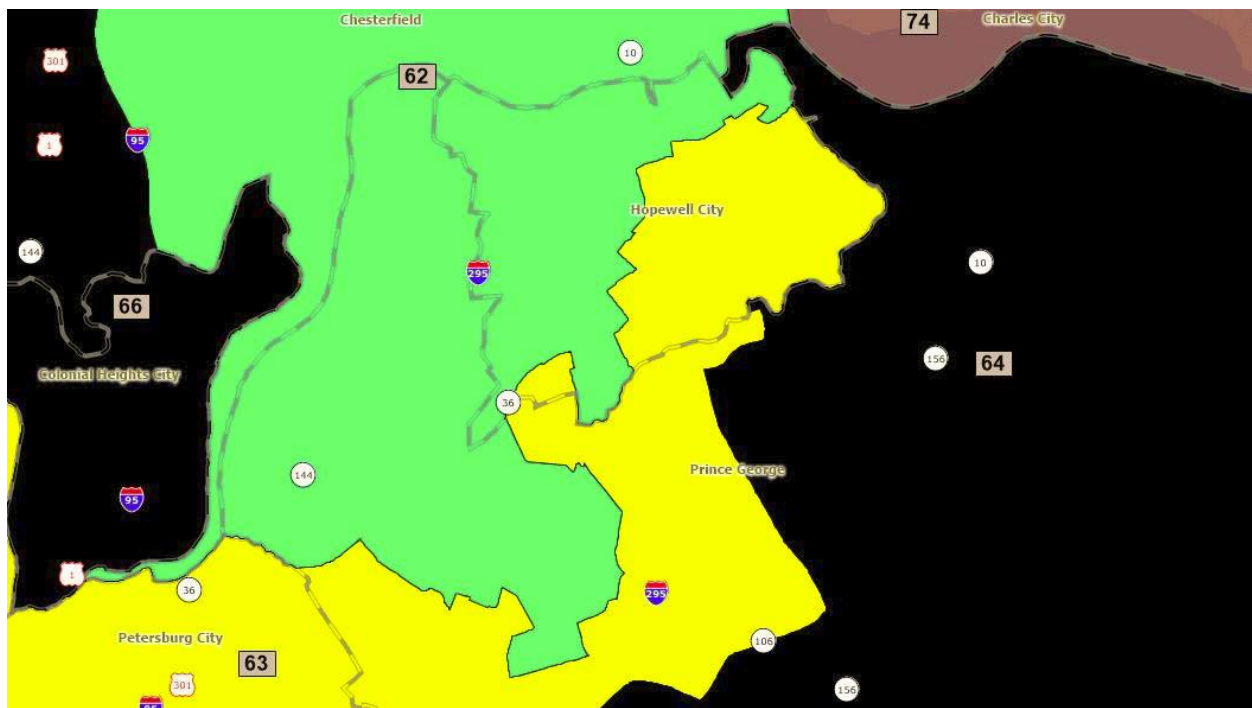
avoids such discontiguous mappings, as have I in all the maps I have drawn. In reviewing other proposed remedial plans I checked for evidence of *fracking,* and regarded it as a disqualifying feature of a plan. [38]

(e) county splits

In the illustrative maps I have drawn that I believe deserve consideration by the Court, I have been able to reduce city and county splits in the unconstitutional districts to a considerable extent. The details are provided later in the Report. Since counties (and cities) represent identifiable communities of interest, my focus in the constitutional redrawing of the eleven districts was on the maintenance of county boundaries, since this was the only straightforward and indisputable indicator of communities of interest available to me.   Between December 7, 2018 and December 14, and in the hearing on January 10, 2019, the parties will have a full opportunity to present to the Court community of interest arguments for why some counties should be split into more pieces than is the case in the illustrative maps I offer to the Court, or why some areas within particular counties should be reconfigured in a different way than what is shown in these illustrative maps. [39]

---

[38] Unfortunately, fracking discontiguities are not identified in the standard reports of city and country splits prepared by the State of Virginia, or in similar standard reports prepared by mapping packages such as *Maptitude*, and so must be identified visually or by creating a customized report.

[39] As indicated earlier, VTDs are simply units of administrative convenience with no special legal status, and their boundaries can change over the course of a decade.

(f) compactness

The two main types of compactness, areal compactness (Reock) and perimeter

irregularity (e.g., Polsby-Popper), measure two rather different things, and they do

not necessarily move in parallel when district lines are changed.[40] In each of the four

geographic areas of the state, at least one of my illustrative modules is more

Nonetheless, I also have sought to minimize VTD splits, and I have further sought
to make use of VTD splitting solely for population balancing purpose. Because the
illustrative maps I prepared for the Court rely heavily on county boundaries, the
degree to which 2011 VTDs are split is concomitantly minimized. On average, in
the redrawn districts in the illustrative plans I propose, VTD splits are dramatically
reduced from those found in the 2011 Enacted map. I should note, however, that
there are a number of difficulties in minimizing VTD splits in map making. First
and foremost a map that shows the locations of VTDs as they now exist was not
available to me at the time I began preparing illustrative maps for the Court, so I
have had to make use of the 2011 VTD configurations. Legislative staff were still in
the process of entering the revised VTD location data provided by political subunits
charged with election administration.   Second, in urban areas, some VTDs can be
high in population, numbering in the thousands, thus making strict population
balancing more difficult. Third, in rural areas, some VTDs may occupy a very large
area, making the drawing of compact districts that do not split VTDs more difficult.
Fourth, even a cursory inspection of a map showing VTDs reveals that they rarely
look like polygons, again complicating the drawing of compact districts. Fifth, not
all VTDs in the state are contained with units of census geography that are larger
than census blocks, such as census block groups and census tracts, and this fact
makes drawing a map using larger units of census geography harder than it
otherwise might be. I would also suggest that, to improve the future ease of state
map drawing, the State of Virginia (and localities) coordinate with the Census
Bureau prior to the 2010 census so that Virginia VTDs can be better aligned with
census geography and/or vice versa.

[40] See Richard Niemi, Bernard Grofman, Carl Carlucci & Thomas Hofeller,
Measuring Compactness and the Role of a Compactness Standard in a Test for
Partisan and Racial Gerrymandering, 52 J. Pol. 1155 (1990).

compact on average on <u>both</u> the Reock and the Polsby-Popper measures than the corresponding districts in the 2011 Enacted map. Indeed, with only two exceptions, all the illustrative remedial modules I propose are as or more compact on average that their counterparts in the 2011 Enacted map on <u>both</u> the Reock and the Polsby-Popper measures.[41] The two exceptions are higher on one of these two measures but lower on the other.[42] One such module has the narrow tailoring feature of limiting the changes in the Petersburg area to only three districts, and a variant of that map that changes four district does increase compactness as compared to the 2011 enacted map. The other module that is preferred to the enacted map on only one of the two measures of compactness retains the positive feature of keeping two districts wholly in Newport News, but draws a constitutional rather than an unconstitutional map for the Newport News district found unconstitutional.

---

[41] Compactness numbers are very difficult to interpret without some context, and it is virtually impossible to compare compactness values across jurisdictions in different states, or sometimes even within a single state across different parts of the state. The feasibility of drawing compact districts at any particular level of government varies with the geography (e.g., the density of populations, and the degree to which the political or other subunits which are being aggregated are themselves compact, and the existence of natural boundaries such as state lines or large bodies of water), compactness is best understood by comparing plans both for the same geography and for the same types of districts.

[42] In general, because the 2011 enacted map has a low level of compactness in many of its districts, the fewer districts whose populations are redrawn to be in more accord with traditional districting principles, the more difficult it is to draw a compact map. The illustrative maps I provide to the Court redraw many fewer districts than any of the five submitted remedial maps, thus making it harder for the maps I provide to achieve high compactness numbers relative to maps that change more districts.

(g) narrow tailoring

i. There were eleven districts in the 2011 Enacted plan identified as unconstitutional: 63, 69, 70, 71, 74, 77, 80, 89, 90, 92, and 95. These districts must be redrawn in a constitutional fashion in any remedy. Moreover, any court adopted plan must be narrowly tailored to remedy the constitutional infirmities in the 2011 enacted plan.

As noted earlier, one important element of a narrowly tailored remedy is that it should confine its changes to those districts which must be changed in the process of the obligatory redrawing of the 11 unconstitutional districts.   This principle of narrow tailoring suggests the appropriateness of limiting the changes in any remedial plan to the 11 unconstitutional districts and to the 22 additional districts that are adjacent to the unconstitutional ones, a total of 33 districts -- unless there are compelling geographic or demographic reasons to the contrary.

The principle of narrow tailoring also suggests limiting district changes in the remedial plan to the 23 districts that contain pieces of counties that are also contained within the unconstitutional districts, except as might be needed to assure population balance across the redrawn districts. Unconstitutionality was specifically found for only eleven districts in the 2011 enacted plan –with this finding in all but one of the districts that were drawn with the avowed aim of containing a 55% black voting percentage. However, as a matter of simple geographic logic, if there are districts other than the unconstitutional eleven that

contain portions of the populations of some of the 15 counties that have pieces in the

eleven districts, at least some of those districts had to have been affected

by/implicated in the line drawing that created the unconstitutionality in the eleven

districts found to be unconstitutional. This is especially true if the portion(s) of a

county not contained within the unconstitutional districts have populations that are

racially distinct from the portion(s) of the county found inside the unconstitutional

districts. Thus, remedying the unconstitutionality of the eleven districts will,

necessarily, require changes in the district boundaries of some of the additional

districts containing the counties found within the unconstitutional eleven. In

terms of this straightforward geographic logic, as many as 34 districts might need

to be redrawn.

ii. However, on the one hand, not all of these 34 districts are adjacent to one of the

unconstitutional districts. And, on the other hand, not all of the districts not found

to be unconstitutional that lie adjacent to the unconstitutional districts contain

pieces of one or more of the counties found in an unconstitutional district. In

particular, there are three other districts that are adjacent to one or more of the

unconstitutional districts, but which do not contain a piece of any of the 15 counties

found in whole or part within the unconstitutional districts (districts 55, 96, 97).

And there are five other districts that are not adjacent to one or more of the

unconstitutional districts, but which do not contain a piece of at least one of the 15

counties found in whole or part within the unconstitutional districts (districts 21,

56, 65, 82, 84).

Recognition of these two distinct sets of constraints on narrowly tailoring led me to seek to limit boundary changes in my illustrative remedial maps to the unconstitutional districts and to those that satisfy both a "district adjacency constraint" and a "potentially implicated county" constraint, i.e. districts that lie in the intersection of these two sets of constraints. There are 30 such districts, with 19 districts that are both adjacent to one or more the unconstitutional ones and also containing a piece of at least one of the 15 counties found in whole or part within the unconstitutional districts (61, 62, 64, 66, 68. 72, 73, 75, 76, 78, 79, 81, 83, 85, 91, 93, 94, 96, 100).

iii. In other jurisdictions, with other sets of factual circumstances, to fully resolve the constitutional infirmities, it might be necessary to effectuate a remedy that included the union[43] rather than the intersection of these two sets of constraints. Here however, after careful review of districting alternatives, I am satisfied that both constraints can be simultaneously satisfied so as to create narrowly tailored remedial plans. Thus, in my view, changes to the enacted plan should be limited to no more than 30 districts at maximum.[44]

---

[43] There are 38 districts that lie in the union of the "adjacency" and "affected county" constraint.

[44] The only possible expansion to make changes in districts not in this set would occur if there are Section 2 issues that would require including contiguous minority populations in other areas as part of a compactly drawn majority minority district. But, given the factual circumstances in this case, I do not believe that issues of this type are relevant.

iv. In my view changing even as few as 30 districts involves changing more districts than are actually needed to implement a constitutional and narrowly tailored redrawing. A careful investigation of redistricting options demonstrates that the number of districts that need to be redrawn in the 2011 enacted map to effectuate a narrowly tailored constitutional map is actually lower than 30. In other words, in my view, not all the districts that are both adjacent to the unconstitutional ones and contain portions of counties found within the unconstitutional districts need to be redrawn in order to construct a remedy that is narrowly tailored.

v. Complete maps that affect only 21 districts or that affect only 26 districts can be drawn based on the geographically defined illustrative remedial modules I provide to the Court. Because there are potential tradeoffs among traditional redistricting criteria, and minimization of unnecessary county splits is not the only aspect of narrow tailoring (e.g., improving compactness, or reducing splits among counties might also be taken into account) other plan feature comparisons may lead the Court, under the totality of circumstances, to a preference for a remedy that changes more than 21 districts.

vi. I have presented alternative illustrative maps that address tradeoffs among traditional redistricting criteria in slightly different ways. The details are provided later in the Report. But, a remedial plan relying on traditional districting criteria

that is seeking to be narrowly drawn, should not, in my view, redraw more than 26 districts.

vii. one element of narrow tailoring involves respect for the existing geographic centering of the districts found unconstitutional, while redrawing the district in a constitutional fashion. In nine of the eleven districts this is straightforward to do since the districts have a preponderant (or sole) county population within them and thus can be redrawn centered within that county. In one of the districts, district 63, there is a plurality county, Petersburg, which can used as the core of the redrawn district, though there are multiple options for how that district is to be drawn. In the remaining district, district 70, the combination of pieces of counties in that district means that there are many different ways the district might be redrawn and most of these will involve multi-county combinations, especially if other unconstitutional districts are drawn to lie wholly are largely within given counties.

vi. One possible element of a narrowly tailored plan is not changing the district numbering scheme. Even though the numbering scheme for the Virginia House of Delegates reflects some historical patterns that in the present day make absolutely no sense (see e.g., the location of district 21 adjacent to districts 78 and 84), I have left the district numbering untouched.

(h) I would emphasize that, in all the illustrative plans I have drawn, I have sought to be entirely neutral with respect to partisanship, with compliance with traditional districting criteria and the remedying of unconstitutionality in a narrowly tailored fashion dictating shapes of redrawn districts, and limiting the number of districts that were redrawn. In reconfiguring both the unconstitutional districts and the redrawn district adjacent to the unconstitutional ones, I have drawn districts in a fashion relying on traditional districting criteria and have been blind to the implications of my line drawing for partisan outcomes. I have considered probable electoral outcomes in the redrawn unconstitutional districts only in the unconstitutional districts, and only with respect to avoiding potential minority vote dilution in the redrawing process, and only after I had drawn a potential remedial district with no concern for race. In the unconstitutional districts, electability issues could not be avoided because of the need to assess whether a redrawn district remained one in which the minority community realistically had an equal opportunity to elect candidates of choice at both the primary and general election level. [45]

(i). minimizing pairing of incumbents

---

[45] As noted earlier, where not essential to provide equal protection assessment for the African-American community, I did not consider partisan outcomes. This case does not involve any finding of partisan gerrymandering that would need to be addressed in a remedial plan.

i. Minimizing pairing of incumbents is sometimes treated as a component of a "least changed" plan.[46] However, in *North Carolina v. Covington*, 138 S. Ct. 2548 2018) the Supreme Court has held that, in a remedial plan, a state redistricting body may not rely on an otherwise legitimate redistricting consideration—such as keeping all incumbent homes in their original district— if doing so would prevent it from completely remedying an identified constitutional violation.

ii. Many of the districts in the 2011 Enacted plan were drawn with high levels of fragmentation of county boundaries, and this is true both for the districts found unconstitutional and those immediately adjacent to them which would need to be redrawn. This excessive fragmentation of county populations was one of the types of evidence presented at the trial as to why race was a preponderant motive. In particular, small white majority pieces of counties were disproportionately found in white majority districts, and small black majority pieces of counties were disproportionately found in black majority districts. As a consequence of this high fragmentation of county borders, often in a way that directly involved race,

---

[46] The relevant portion of Article IV. Legislature Section 4 of the Virginia Constitution, describing qualifications of senators and delegates states: "Any person may be elected to the Senate who, at the time of the election, is twenty-one years of age, is a resident of the senatorial district which he is seeking to represent, and is qualified to vote for members of the General Assembly. Any person may be elected to the House of Delegates who, at the time of the election, is twenty-one years of age, is a resident of the house district which he is seeking to represent, and is qualified to vote for members of the General Assembly. A senator or delegate who moves his residence from the district for which he is elected shall thereby vacate his office."

minimizing the fragmentation of county and locality boundaries in the unconstitutional districts and avoiding drawing districts with a racially preponderant motive becomes more complicated if there is added, as the last consideration, a concern to avoid incumbency pairing.

iii. For example, in the 2011Enacted Plan, there are pieces of Richmond in 6 districts, and there are four 2011 incumbents with homes located in Richmond, all residing north of the river, even though the County population is only the equivalent of slightly more than two and a half legislative districts. In 2017 there are still four incumbents residing in Richmond. Thus, if, in a remedial plan, Richmond is divided into only three pieces, it is simply mathematically impossible to avoid pairing at least two of the four Richmond based incumbents. The only way to avoid pairing some of the four present incumbents with homes is Richmond is to divide Richmond into more than three pieces. This is the approach taken in the five submitted remedial plans, with some of these plans splitting Richmond into more than four pieces. And it is also the approach taken in the illustrative modules I have drawn in the Richmond area.

iv. My initial line drawing did not take present incumbencies into account.

v. Prior to November 30, the only information available to the staff of the House of Delegates in the form of a geocoding mapping layer was the home addresses for 2009/2011 incumbents.

vi. After I had generated plans that respected the geographic centering of the unconstitutional districts to the extent feasible, without taking any information about incumbent locations into account, I explored plans that did not pair any of the 2009/2011 incumbents. Those map explorations convinced me that one could draw constitutional maps that avoided the pairing of the incumbents who were in place as of the creation of the 2011 Enacted map – though avoiding incumbent pairings did come at the cost of some additional county pieces being created, and doing so reduced the compactness of some districts.

vii. In late November, I requested a Court Order to obtain the present addresses of House of Delegates incumbents in a geocoded fashion that allowed me to overlay present incumbent addresses on maps. After correcting an error in the home location of one of the incumbents, I then created reconfigured illustrative remedial plans in which all <u>present</u> incumbents had their home in their present districts.

viii. Comparing the exploratory maps I drew without taking incumbency protection into account, drawn solely for the purpose of creating illustrative narrow tailored maps that followed traditional districting criteria, and the illustrative remedial

63

maps I am presenting to the court that do avoid any incumbency pairing, I believe

that avoiding incumbency pairing has been accomplished in my illustrative modules

in a way that remedies constitutional infirmities in the unconstitutional districts.

Moreover, while my map explorations suggest that maps that do not pair

incumbents are, on average, marginally less compact and divide counties into

somewhat more pieces than maps that pay no attention to incumbent locations,

nonetheless, as demonstrated by my illustrative remedial maps, it is possible to

create narrowly tailored means of remedying constitutional infirmities in a way

that avoids a race preponderant motive while still avoiding the pairing of any

incumbents.

IV. Basic features of the illustrative plans developed by the Special Master, with
review of potential districts organized according to four geographic modules, and
the criteria enumerated above

1.   There are two especially useful ways to classify the eleven unconstitutional

districts before commencing the process of remedial line drawing. The first is in

terms of the types of   changes that will be needed to make the district

constitutional (see discussion in the body of the Report); the second is in terms of

the geographic area of the state in which the unconstitutional district is located.

(a) By partitioning the unconstitutional districts by geography, it is possible to

partition the task of line drawing in multiple smaller separable tasks, involving

only one or a few unconstitutional districts that need to be drawn in each segment. By this modularization of the redistricting task we can consider alternative plans for each geographic area that involve redrawing the unconstitutional districts and some of the adjacent districts taken as a group without concern for the configuration of districts outside of those in the selected module. The Court can then pick a preferred remedial plan for each geography, and combine the chosen separate geographic components so as to create a viable narrowly tailored constitutional plan for the entire state

(b) The geographic partitioning I made use of involved four geographic areas within which particular unconstitutional districts were redrawn: (1) the Richmond and Henrico area (containing unconstitutional districts 69, 70, 71, 74), the Petersburg area (containing unconstitutional district 63), and the Norfolk-Portsmouth-Chesapeake area (containing unconstitutional districts 79, 80, 89, 90), and (4) the Hampton-Newport News area, also referenced as the Peninsula (containing unconstitutional districts 92 and 95). This modularized approach to line drawing allows the parties and intervenors to comment on how they might propose particular geography be redrawn without forcing a ripple of changes in other geographic areas of the state.[47]

---

[47] In the central portion of the state (the Richmond-Petersburg area) district 62 touches districts 70 and 74 as well as district 63.   This creates a need for a consistent configuration of district 62 in both the Petersburg and the Richmond modules.

(c) Another useful typology I made use of in line drawing involves dividing the set of eleven unconstitutional districts into four categories that cross-cut geographic categorization:

i. This typology involves: (a) districts in which the preponderant population comes from one large county (districts 69, 71, 74, 77, 80, 90, 95), (b) districts in which the entire population comes from a single county (districts 89 and 92), (c) districts in which it is difficult to identify a clearly preponderant county (district 70), and (d) districts in which the preponderant county is a small county which is already included in the county in its entirety, and there are multiple other counties with portions in the district (district 63).

ii. It is possible to redraw in a constitutional fashion almost all the districts in the first and second categories such that their population now comes from a single county, rather than, as in the 2011 Enacted Plan, including (small) pieces of other counties with a distinctive racial character. For example, districts 77, 80, 89, 90 in the Norfolk area are drawn in all of my illustrative modules to lie within a single county, and two of the three unconstitutional districts in the Richmond area in these categories (districts 69 and 74) are so drawn, and I provided an illustrative module for the Peninsula in which both district 92 and district 95 lie within a single county. Thus, I have drawn illustrative modules with the feature that a composite

map can be drawn using them which will have 8 of the 11 unconstitutional districts lying entirely within a single county and thus satisfying a key traditional districting principle. This is in remarkable contrast to the 2011 Enacted map, in which only 2 of the eleven unconstitutional districts are contained wholly within a single county.

iii. With respect to the second category, when remedying constitutional violations in other unconstitutional districts that are adjacent or nearby to the whole county unconstitutional district, there will necessarily be geographically and population mandated spillover effects, and these can operate in a fashion that will, concomitantly, permit change in the single county unconstitutional district so as to remedy the constitutional violation.

iv. With respect to the third and fourth categories, it is possible to redraw districts in that category, districts 63 and 70, in a constitutional way, though multi-county versions will still be necessary.

2. Illustrative modularized maps in hour regions of the state , with comparison to the 2011 Enacted Map

(a) Richmond area.

In the Richmond area I have offered to the Court one basic illustrative map,

and three quite minor variants of that map that do not differ in the shape of any of

the unconstitutional districts (69, 70 71, and 74) in this geographic region, but only

in the shapes of districts 72 and 73. The reason to consider a change in both

districts is that the incumbent locations in these districts are not the same in 2017

as in 2011, and acknowledging that fact can improve overall district compactness

without affecting changes in the unconstitutional districts. All of these maps in my

view remedy the constitution violation found in districts 69, 70, 71, and 74. None

contain any districts with more than a 55% black voting age population. Each has

three to four fewer county pieces than the 2011 Enacted map. Two of the three are

better than the Enacted map on both the Polsby-Popper and Reock compactness

measure, and the third is almost as good on one measure and visibly better on the

other. None involve any fracking.

A map and key statistics about each of these Richmond area variants is provided

below, with comparison to the 2011 Enacted map.

Richmond Module

VA Enacted Plan (HB5005) - Richmond

RICHMOND Enacted Map
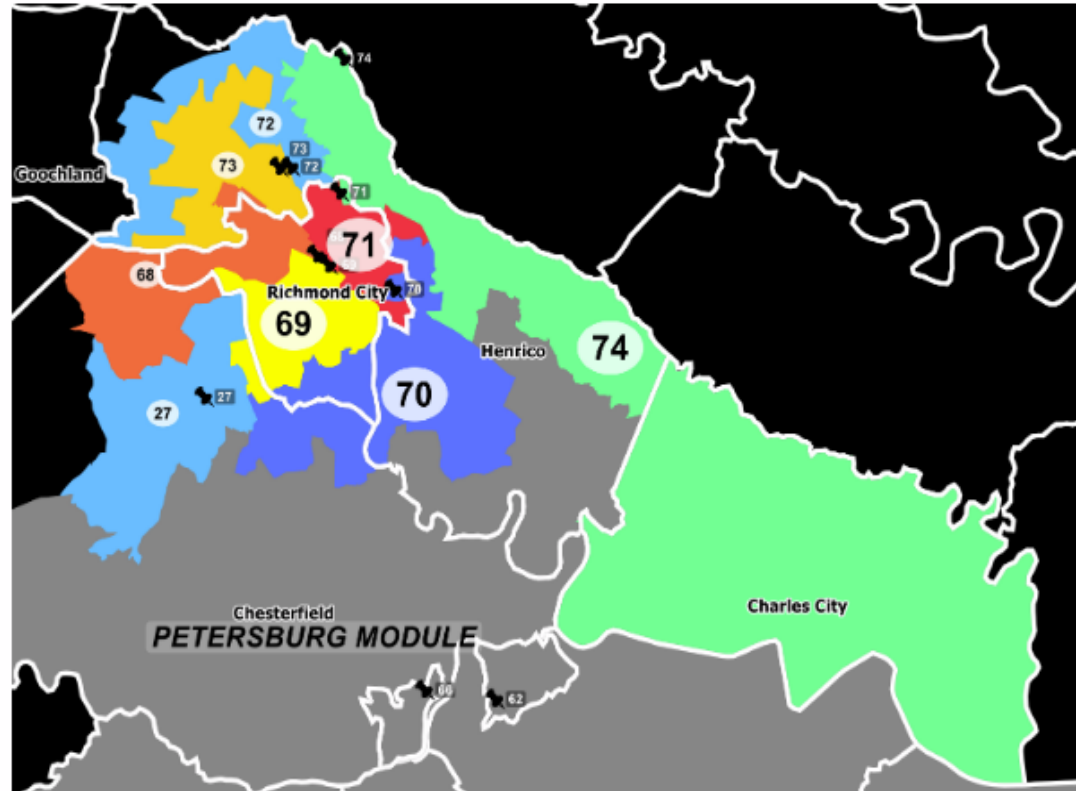
Different Module

District	Population	Dev %	BVAP %	Fairfax '13 %	Obama '12 %	Reock	Polsby-Popper
■ 27	79381	-0.79%	18.13%	57.85%	45.79%	0.35	0.25
■ 68	79611	-0.50%	7.05%	40.25%	44.70%	0.36	0.25
■ 69	79,386	-0.78%	54.78%	61.33%	86.08%	0.52	0.34
■ 70	79,382	-0.78%	55.99%	66.92%	79.82%	0.4	0.19
■ 71	80,322	0.39%	54.87%	50.28%	87.02%	0.33	0.24
■ 72	80764	0.94%	13.16%	41.33%	45.26%	0.26	0.08
■ 73	80135	0.16%	13.26%	41.48%	46.75%	0.39	0.15
■ 74	79,594	-0.52%	56.91%	57.5%	75.06%	0.16	0.12

■ Adjacent District
■ Unconstitutional District

County Splits

District	Total Counties		Charles City	Chesterfield	Henrico	Richmond City
■ 27	1		-	79,381	-	-
■ 68	3		-	40,203	4,472	34,936
■ 69	2		-	4,994	-	74,392
■ 70	3		-	33,281	28,615	17,486
■ 71	2		-	-	5221	75101
■ 72	1		-	-	80,764	-
■ 73	1		-	-	80,135	-
■ 74	3		7,256		70,039	2,299

- Total County Pieces: 16

RICHMOND 1A

Richmond 1A Map
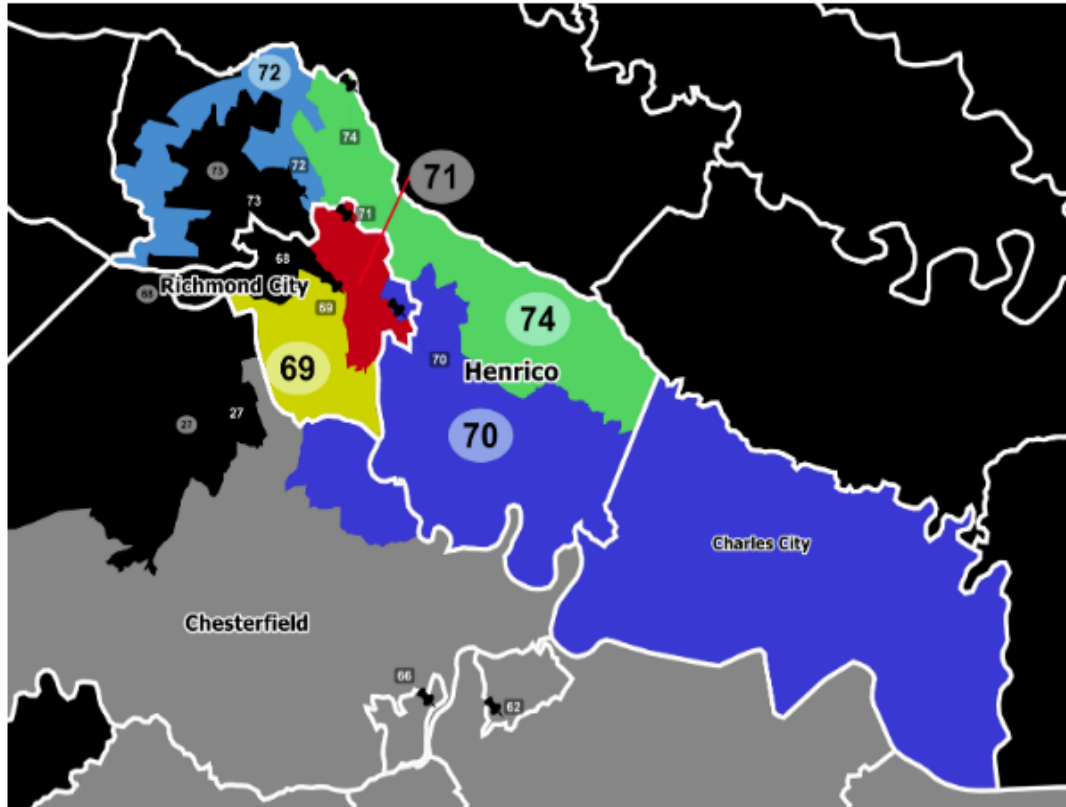
District	Population	Dev %	BVAP %	Fairfax '13 %	Obama '12 %	Reock	Polsby-Popper
■ 27	79,381	-0.79%	18.44%	57.85%	45.79%	0.35	0.25
■ 68	79,611	-0.50%	7.25%	40.25%	44.70%	0.36	0.25
■ 69	79,924	-0.11%	52.29%	62.48%	72.38%	0.36	0.36
■ 70	79,318	-0.86%	54.38%	61.18%	86.24%	0.29	0.16
■ 71	79,920	-0.11%	54.01%	51.45%	86.72%	0.20	0.17
■ 72	79,445	-0.71%	15.38%	45.32%	46.23%	0.26	0.08
■ 73	80,135	0.16%	13.55%	41.48%	46.75%	0.39	0.15
■ 74	79,355	-0.82%	54.37%	55.98%	74.10%	0.19	0.18

■ District Unchanged
■ Additional Adjacent District Changed
■ Unconstitutional District

County Splits

District		Charles City	Chesterfield	Henrico	Richmond City
■ 27	1	-	79,381	-	-
■ 68	3	-	40,203	4,472	34,936
■ 69	1	-	-	-	79,318
■ 70	4	7,256	28,912	33,716	10,040
■ 71	1	-	-	-	79,920
■ 72	1	-	-	79,445	-
■ 73	1	-	-	80,135	-
■ 74	1	-	-	79,355	-

- Total County Pieces: 13
- Districts Changed: 5

RICHMOND 1B

Richmond 1B Map
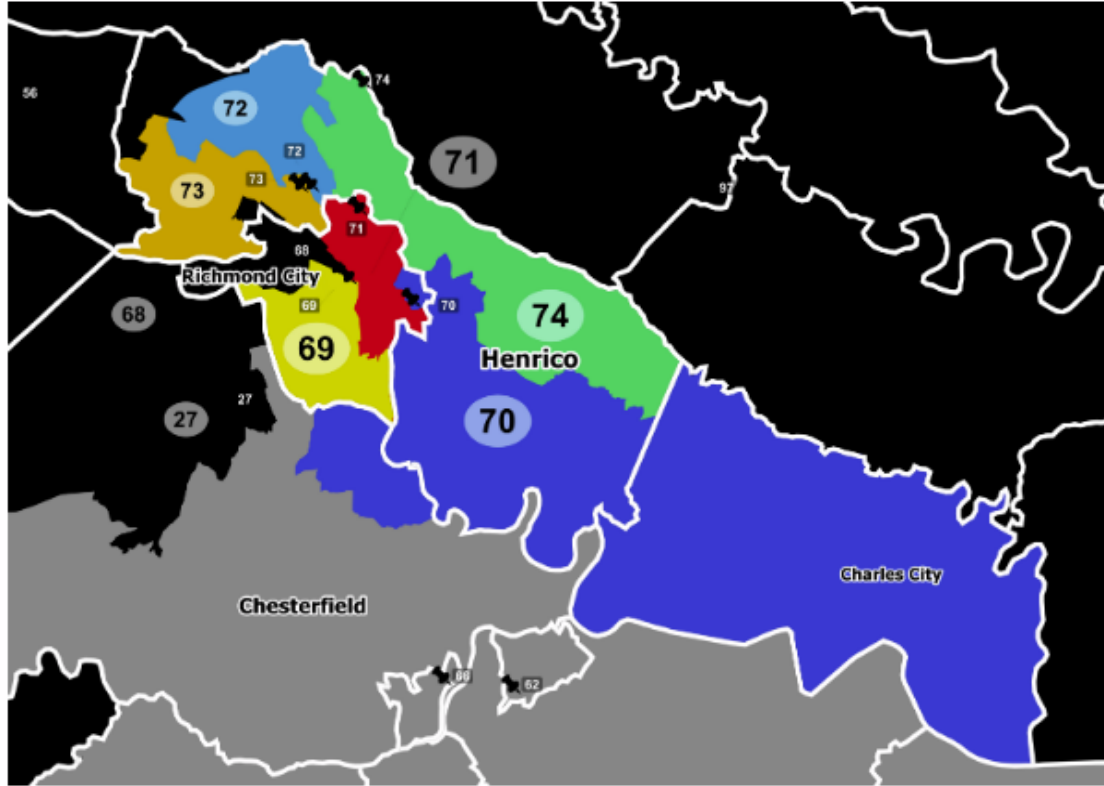
District	Population	Dev %	BVAP %	Fairfax '13 %	Obama '12 %	Reock	Polsby-Popper
■ 27	79,381	-0.79%	18.44%	57.85%	45.79%	0.35	0.25
■ 68	79,611	-0.50%	7.25%	40.25%	44.70%	0.36	0.25
■ 69	79,318	-0.86%	54.38%	61.18%	86.24%	0.36	0.36
■ 70	79,924	-0.11%	52.29%	62.48%	72.38%	0.29	0.16
■ 71	79,920	-0.11%	54.01%	51.45%	86.72%	0.20	0.17
■ 72	80,221	0.26%	19.49%	52.02%	51.35%	0.47	0.28
■ 73	79,359	-0.81%	9.32%	36.17%	42.09%	0.40	0.21
■ 74	79,355	-0.82%	54.37%	55.98%	74.10%	0.19	0.18
MEAN	79,636	-0.47%	33.69%	52.17%	62.92%	0.33	0.23

■ District Unchanged
■ Additional Adjacent District Changed
■ Unconstitutional District

74

District	Total Counties	Charles City	Chesterfield	Henrico	Richmond City
■ 27	1	-	79,381	-	-
■ 68	3	-	40,203	4,472	34,936
■ 69	1	-	-	-	79,318
■ 70	4	7,256	28,912	33,716	10,040
■ 71	1	-	-	-	79,920
■ 72	1	-	-	79,445	-
■ 73	1	-	-	80,135	-
■ 74	1	-	-	79,355	-

- Total County Pieces: 13
- Districts Changed: 6

 (b) Petersburg area

I offer to the Court two illustrative modules for the Petersburg area (district 63). The first of these has two very minor variations which differ only in how Dinwiddie is treated in the module: Petersburg illustrative module 1A and Petersburg illustrative module 1B. In one variant the Dinwiddie portion of 2011 District 63 is modified slightly so as to improve overall district compactness, and this change necessitates a slight modification of the Dinwiddie portion of District 75. In the other, the Dinwiddie configurations are left completely unchanged. Thus, one module changes only three districts, while the second changes four. In Petersburg illustrative module 2, more substantial changes are made, affecting change in five districts, rather than only three districts, or only four districts. However, this map provides the best overall compactness and it has the fewest county pieces. Moreover, while all of these maps do a good job in terms of the number of counties that are kept whole within one of the districts, it is Petersburg Module 2 that does the best job in this regard.   All of these maps in my view remedy the constitution violation found in district 63. None make race a preponderant criterion. None contain any fracking.

A map and key statistics about each of these Petersburg area variants is provided below, with comparison to the 2011 Enacted map.

Petersburg Module

VA Enacted Plan (HB5005) - Petersburg

PETERSBURG Enacted Map
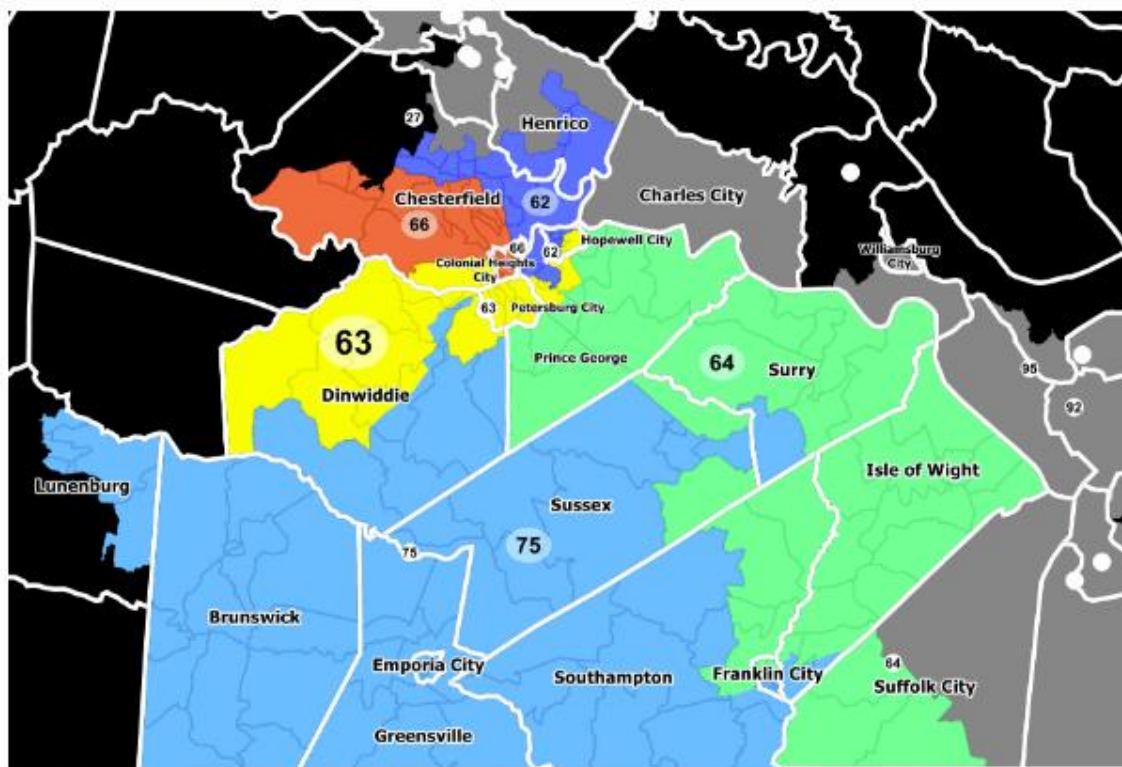
Different Module

District	Population	Dev %	BVAP %	Fairfax '13 %	Obama '12 %	Reock	PolsbyPopper
62	79,677	0.42%	24.23%	64.83%	46.93%	0.36	0.13
63	79,602	0.51%	59.09%	68.4%	72.18%	0.25	0.16
64	79,262	0.93%	24.05%	63.19%	41.64%	0.37	0.16
66	79,397	0.77%	15.79%	62.36%	37.27%	0.31	0.27
75	79,295	0.89%	55.30%	62.09%	62.71%	0.41	0.19
MEAN	79446.6	0.00704	0.35692	0.64174	0.52146	0.34	0.182

Adjacent District
Unconstitutional District

County Splits

District	Total Counties		Brunswick	Chesterfield	Colonial Heights	Dinwiddie	Emporia	Franklin City	Greensville
■ 62	4		-	49,193	-	-	-	-	-
■ 63	5		-	13,302	-	18,117	-	-	-
■ 64	7		-	-	-	-	-	3,631	-
■ 66	2		-	61,986	17,411	-	-	-	-
■ 75	10		17,434	-	-	9,884	5,927	4,951	12,243

- Total County Pieces: 28

County Splits

County Splits

District	Total Counties		Henrico	Hopewell City	Isle of Wight	Lunenburg	Petersburg	Prince George	Southampton	Suffolk City	Surry	Sussex
■ 62	4		7,877	15,215	-	-	-	7,392	-	-	-	-
■ 63	5		-	7,376	-	-	32,420	8,387	-	-	-	-
■ 64	7		-	-	34,445	-	-	19,946	6,110	7,112	6,374	1,644
■ 66	2		-	-	-	-	-	-	-	-	-	-
■ 75	10		-	-	825	4,444	-	-	12,460	-	684	10,443

PETERSBURG 1A

Different Module
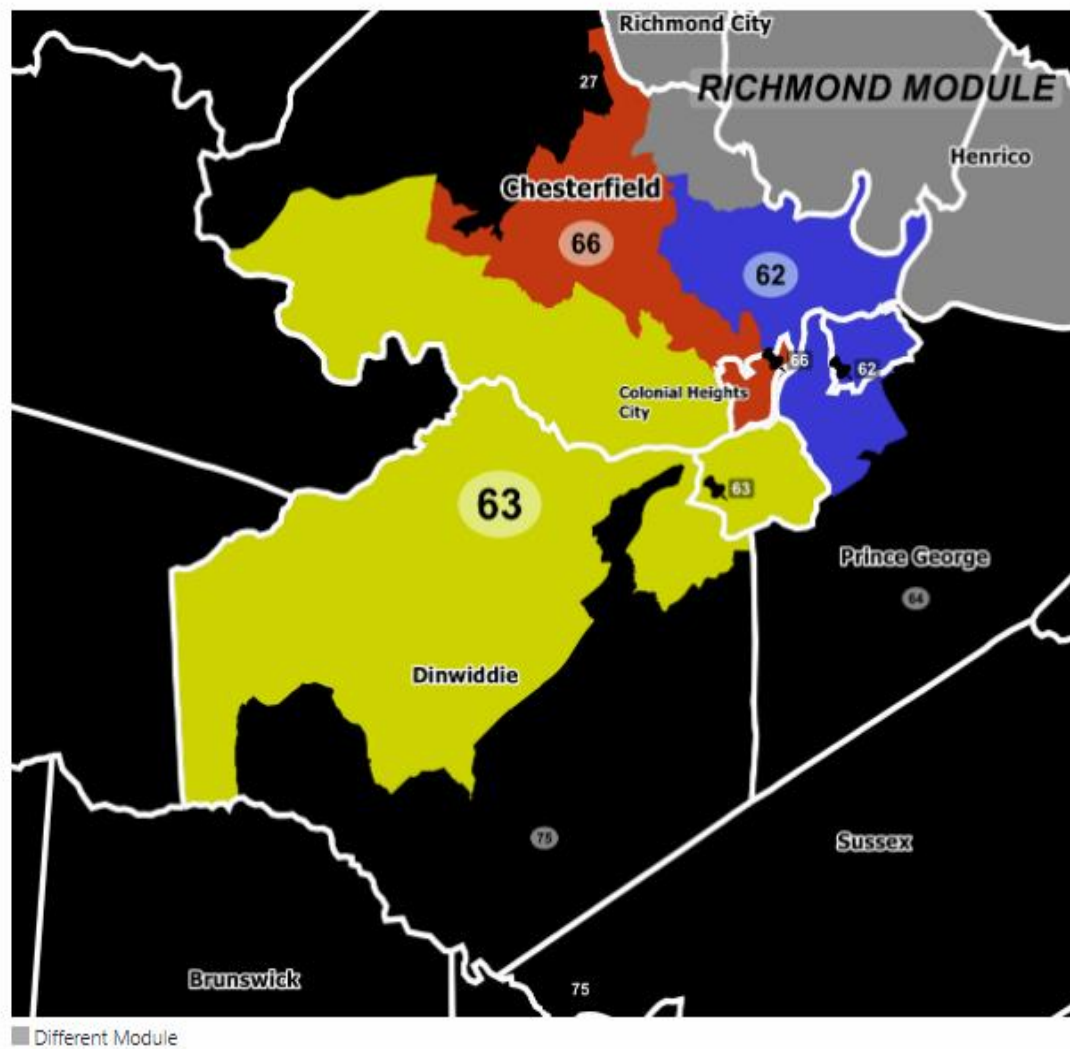
Petersburg 1 Map

District	Population	Dev %	BVAP %	Fairfax '13 %	Obama '12 %	Reock	PolsbyPopper
62	80,445	0.54%	29.23%	65.66%	48.64%	0.41	0.19
63	79,859	0.19%	51.81%	68.11%	63.21%	0.43	0.17
64	79,262	0.93%	24.24%	63.19%	41.64%	0.37	0.16
66	79,858	0.19%	25.81%	67.65%	48.56%	0.27	0.14
75	79,295	0.89%	55.43%	62.09%	62.71%	0.41	0.19
MEAN	79,744	0.55%	37.30%	65.34%	52.95%	0.38	0.17

County Splits

District	Total Counties	Brunswick	Chesterfield	Colonial Heights	Dinwiddie	Emporia	Franklin City	Greensville	Hei
62	3		42,075						
63	3		29,322		18,117				
64	7						3,631		
66	2		62,447	17,411					
75	10	17,434			9,884	5,927	4,951	12,243	

- Total County Pieces: 25
- Districts Changed: 3

District	Population	Henrico	Hopewell City	Isle of Wight	Lunenburg	Petersburg	Prince George	Southampton	Suffolk City	Surry	Sussex
62	80,445		22,591				15,779				
63	79,859					32,420					
64	79,262			34,445			19,946	6,110	7,112	6,374	1,644
66	79,858										
75	79,295			825	4,444			12,460		684	10,443
MEAN	79,744										

PETERSBURG 2 (Illustrative)

Different Module
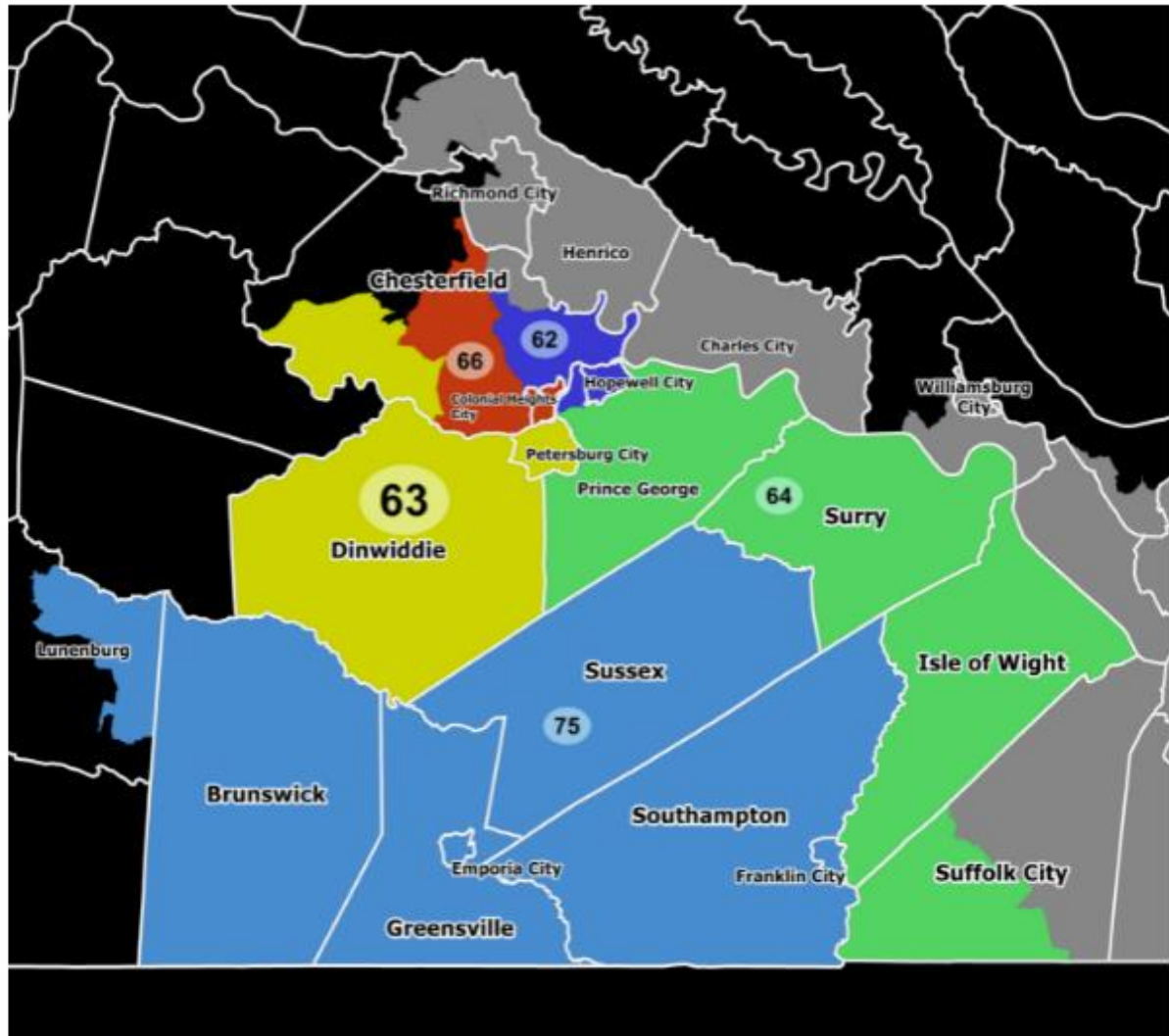
Petersburg 2 Map

District	Population	Dev %	BVAP %	Fairfax '13 %	Obama '12 %	Reock	PolsbyPopper
🟩 62	79,725	0.36%	27.22%	66.89%	47.12%	0.48	0.18
🟥 63	79,814	-0.25%	47.47%	68.50%	59.23%	0.57	0.28
🟩 64	80,082	0.09%	27.38%	65.50%	43.38%	0.32	0.19
🟩 66	79,811	-0.25%	32.31%	66.39%	53.25%	0.37	0.23
🟩 75	79,287	-0.90%	52.45%	58.23%	59.81%	0.41	0.32
MEAN	79,744	-0.19%	37.37%	65.10%	52.56%	0.43	0.24

⬛ District Unchanged
🟩 Additional Adjacent District Changed
🟥 Unconstitutional District

County Splits

District	Total Counties	Brunswick	Chesterfield	Colonial Heights	Dinwiddie	Emporia	Franklin City	Greensville
🟩 62	4		52,051					
🟥 63	3		19,393		28,001			
🟩 64	4							
🟩 66	2		62,400	17,411				
🟩 75	7	17,434				5,927	8,582	12,243

- Total County Pieces: 20
- Districts Changed: 5

District	Henrico	Hopewell City	Isle of Wight	Lunenburg	Petersburg	Prince George	Southampton	Suffolk City	Surry	Sussex
🟩 62	7,877	15,215				5,093				
🟥 63					32,420					
🟩 64			35,270				30,642		7,112	7,058
🟩 66										
🟩 75				4,444			18,570			12,087

- Total County Pieces: 20

(c) Newport News-Hampton area.

I offer to the Court two illustrative module for the Peninsula area: Newport News-Hampton illustrative Module 1 and Newport News-Hampton illustrative Module 2. These two modules differ in how many districts are wholly drawn within Newport News (either one or two), though in both modules district 92 is entirely in Hampton, and district 95 is entirely in Newport News. Each of these maps in my view remedies the constitution violations found in district 95 and district 92. All are drawn in according with traditional districting criteria and do not have race as a preponderant motive. None involve any fracking.

A map and key statistics about each of these Newport News-Hampton Peninsula area variants is provided below, with comparison to the 2011 Enacted map.

PENINSULA Enacted Map
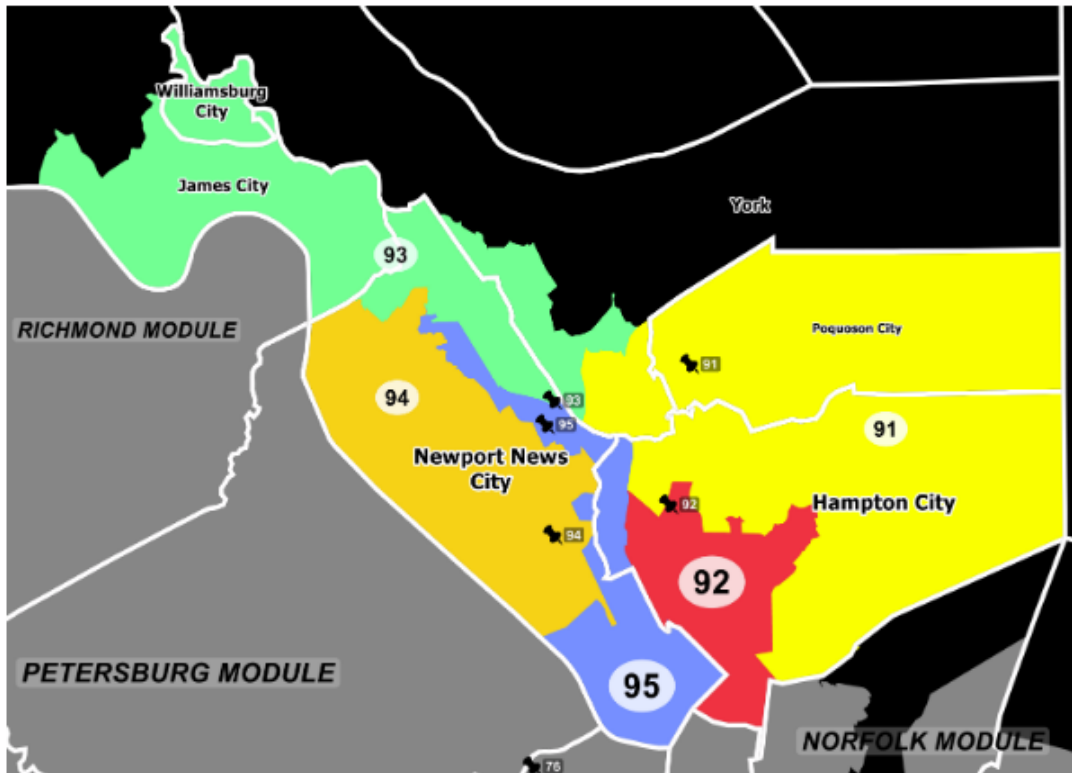
Different Module

District	Population	Dev%	BVAP%	Fairfax '13	Obama '12	Reock	Polsby-Popper
■ 91	79,229	-0.98%	19.24%	62.88%	44.26%	0.6	0.47
■ 92	79,689	-0.40%	60.14%	77.89%	80%	0.34	0.26
■ 93	79,211	-1.00%	22.04%	52.58%	58.10%	0.22	0.16
■ 94	79,429	-0.73%	20.60%	49.74%	52.27%	0.35	0.38
■ 95	80,071	0.08%	59.35%	79.24%	79.28%	0.14	0.14
MEAN	79,526	-0.61%	36.27%	64.47%	62.78%	0.33	0.28

■ Adjacent District
■ Unconstitutional District

County Splits

District	Total Splits	Hampton City	James City	Newport News City	Poquoson	Williamsburg	York
◼ 91	1	79,689					
◼ 92	2	14,584		65,487			
◼ 93	3	43,163			12,150		23,916
◼ 94	4		20,694	35,803		14,069	8,646
◼ 95	1			79,429			

- Total County Pieces: 11

PENINSULA 1
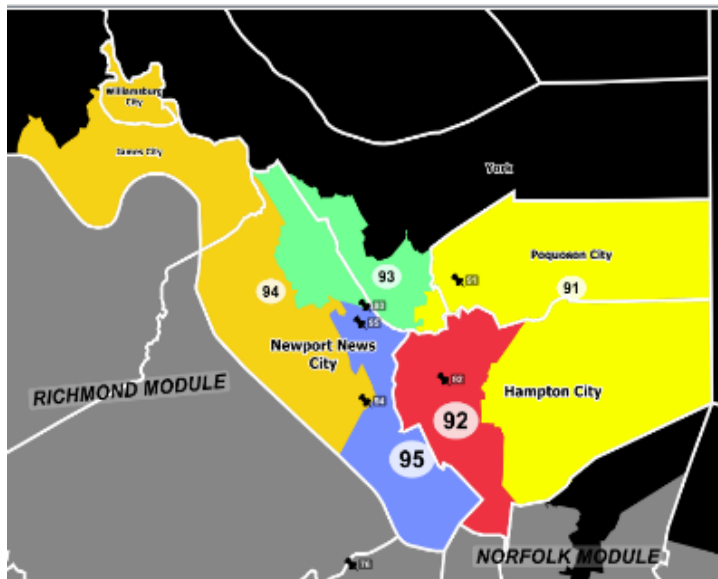
District	Population	Dev%	BVAP%	Fairfax '13	Obama '12	Reock	Polsby-Popper
🟩 91	79,546	-0.58%	32.52%	69.63%	54.14%	0.60	0.40
🟥 92	79,479	-0.66%	53.87%	77.90%	75.75%	0.33	0.26
🟩 93	79,316	-0.87%	32.99%	64.62%	60.58%	0.33	0.27
🟩 94	79,672	-0.42%	16.79%	45.44%	51.73%	0.24	0.20
🟥 95	79,616	-0.49%	47.48%	70.48%	71.91%	0.27	0.30
MEAN	79,526	-0.60%	36.73%	65.61%	62.82%	0.35	0.29

⬛ District Unchanged
🟩 Additional Adjacent District Changed
🟥 Unconstitutional District

County Splits

District	Total Counties	Hampton	James City	Newport News	Poquoson	Williamsburg	York
🟩 91	3	57,957			12,150		9,439
🟥 92	1	79,479					
🟩 93	2			56,193			23,123
🟩 94	3		20,694	44,910		14,068	
🟥 95	1			79,616			

- Total County Pieces: 10
- Districts Changed: 5

PENINSULA 2

PENINSULA 2 Map
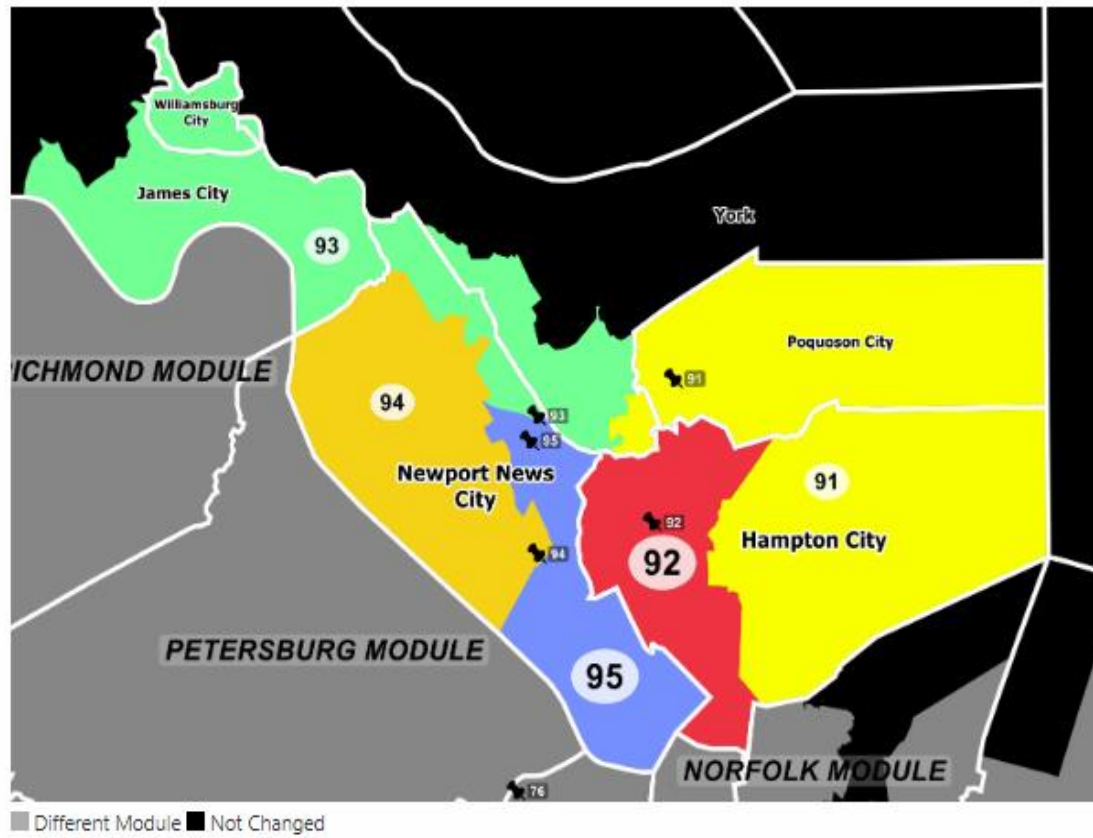
Different Module ■ Not Changed

District	Population	Dev%	BVAP%	Fairfax '13	Obama '12	Reock	Polsby-Popper
🟩 91	79,546	-0.58%	32.52%	69.63%	54.14%	0.60	0.44
🟥 92	79,479	-0.66%	53.87%	77.90%	75.75%	0.33	0.26
🟩 93	79,769	-0.30%	18.18%	50.57%	52.03%	0.20	0.13
🟩 94	79,461	-0.69%	31.13%	56.30%	59.06%	0.16	0.51
🟥 95	79,374	-0.79%	47.36%	71.03%	72.42%	0.25	0.30
MEAN	79,526	-0.61%	36.61%	65.08%	62.68%	0.31	0.33

■ District Unchanged
■ Additional Adjacent District Changed
■ Unconstitutional District

County Splits

District	Total Counties	Hampton	James City	Newport News	Poquoson	Williamsburg	York
■ 91	3	57,957			12,150		9,439
■ 92	1	79,479					
■ 93	4		20,694	21,884		14,068	23,123
■ 94	1			79,461			
■ 95	1			79,374			

- Total County Pieces: 10
- Districts Changed: 5

(d) I offer to the Court one illustrative module for the Norfolk-Chesapeake-Portsmouth area that has three very minor variations: Norfolk-Chesapeake 1A, 1B, 1C. These variations differ only very slightly. One variation changes 10 districts in the area, one changes 9, and one changes only 8. The other differences between these variants are in overall compactness and in the number of distinct county pieces found in the plan. These difference occur in districts adjacent to the unconstitutional districts, with the underlying configurations of the four unconstitutional districts in the area either wholly or essentially unchanged across the variants. All of these maps in my view remedy the constitution violation found in districts 77, 80, 89, and 90. None contain any districts with more than a 55% black voting age population, and some have considerably lower BVAP. All create fewer county splits than the 2011 Enacted map. All are, on average, more compact with respect to both the Reock and the Polsby-Popper measure. All are drawn in according with traditional districting criteria and do not have race as a preponderant motive. None involve any fracking.

A map and key statistics about each of these Norfolk-Chesapeake-Portsmouth area variants is provided below, with comparison to the 2011 Enacted map.

VA Enacted Plan (HB5005) - Norfolk/Chesapeake

NORFOLK Enacted Map
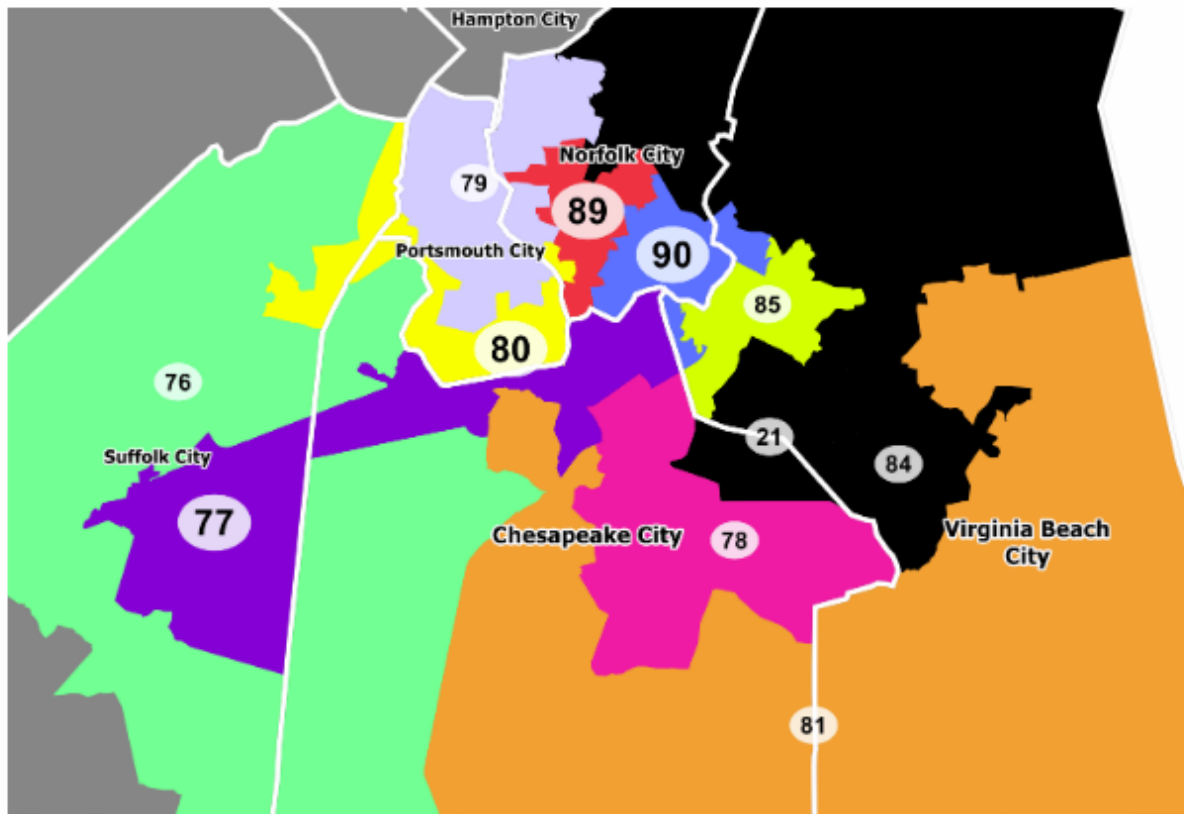
Different Module

| District	Population	Dev%	BVAP%	Fairfax '13	Obama '12	Reock	Polsby-Popper
■ 21	79,608	-0.50%	23.86%	64.66%	52.43%	0.42	0.31
■ 76	80,313	0.38%	25.14%	65.98%	43.89%	0.48	0.17
■ 77	79,627	-0.48%	58.78%	78.92%	77.71%	0.19	0.15
■ 78	80,475	0.58%	17.14%	64.46%	38.82%	0.46	0.35
■ 79	80,243	0.29%	29.46%	48.50%	62.15%	0.45	0.26
■ 80	80,705	0.87%	56.30%	61.01%	75.16%	0.26	0.11
■ 81	79,438	-0.71%	18.60%	54.83%	41.62%	0.40	0.23
■ 83	79,538	-0.59%	15.12%	46.02%	46.69%	0.52	0.34
■ 84	80,281	0.34%	20.45%	56.13%	49.57%	0.44	0.26
■ 85	80,800	0.99%	18.93%	57.51%	49.76%	0.40	0.24
■ 89	79,614	-0.50%	55.46%	51.92%	82.03%	0.40	0.20
■ 90	80,425	0.52%	56.59%	67.78%	79.98%	0.46	0.20
MEAN	80,089	0.10%	32.61%	58.32%	59.81%	0.41	0.24

■ Adjacent District
■ Unconstitutional District

County Splits

District	Total Counties	Chesapeake City	Norfolk City	Portsmouth City	Suffolk City	Virginia Beach City
■ 21	2	5,030				74,578
■ 76	2	33,222			47,091	
■ 77	2	62,684			16,943	
■ 78	1	80,475				
■ 79	2		41,702	38,541		
■ 80	4	6,590	3,682	56,994	13,439	
■ 81	2	34,208				45,230
■ 83	2		33,008			46,530
■ 84	1					80,281
■ 85	1					80,800
■ 89	1		79,614			
■ 90	2		50,313			30,112

- Total Counties Pieces: 22

NORFOLK 1A

NORFOLK A Map
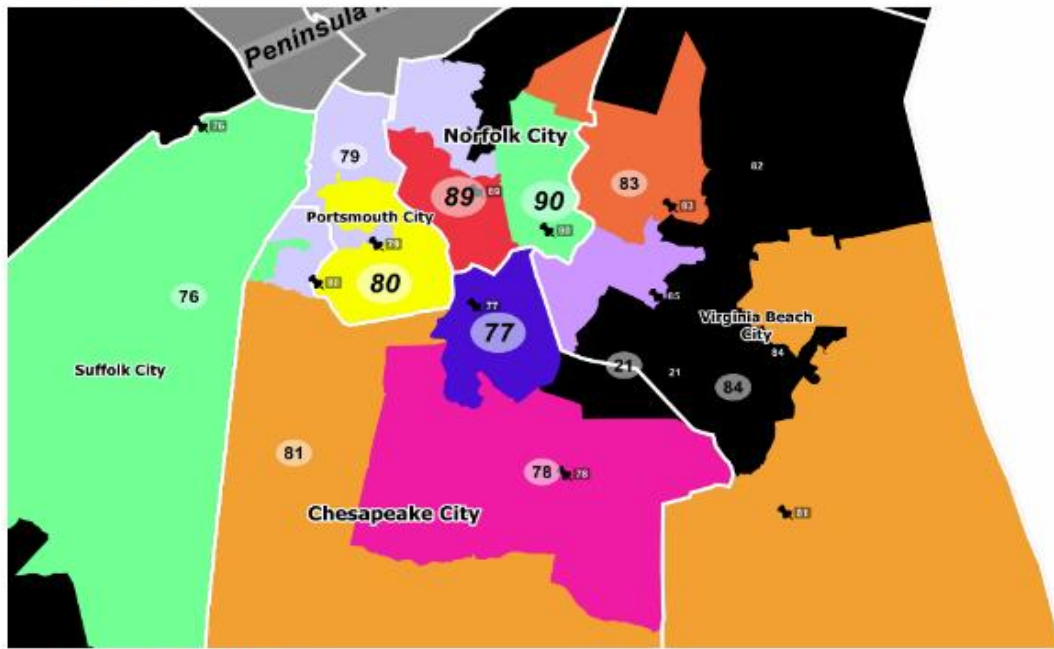
Different Module ■ Not Changed

District	Population	Dev%	BVAP%	Fairfax '13	Obama '12	Reock	Polsby-Popper
◼ 21	79,608	-0.50%	23.86%	64.66%	52.43%	0.42	0.31
◼ 76	79,795	-0.27%	42.89%	68.81%	57.60%	0.44	0.45
◼ 77	79,810	-0.25%	40.23%	73.03%	63.53%	0.55	0.52
◼ 78	80,703	0.87%	16.85%	64.96%	36.04%	0.49	0.42
◼ 79	79,895	-0.14%	31.46%	51.27%	59.38%	0.27	0.11
◼ 80	79,340	-0.84%	51.38%	57.45%	70.67%	0.55	0.36
◼ 81	79,950	-0.08%	25.34%	69.21%	49.65%	0.32	0.20
◼ 83	80,857	1.06%	23.14%	52.46%	52.87%	0.50	0.29
◼ 84	80,281	0.34%	20.45%	56.13%	49.57%	0.44	0.26
◼ 85	80,842	1.04%	21.28%	59.80%	51.13%	0.39	0.30
◼ 89	80,481	0.59%	54.92%	51.64%	82.47%	0.38	0.48
◼ 90	79,505	-0.63%	41.93%	59.55%	69.72%	0.42	0.51
MEAN	80,089	0.10%	32.81%	60.75%	57.92%	0.43	0.35

◼ District Unchanged
◼ Adjacent District Changed
◼ Unconstitutional District

County Splits

District	Total Counties		Chesapeake City	Norfolk City	Portsmouth City	Suffolk City	Virginia Beach City
◼ 21	2		5,030				74,578
◼ 76	2		2,322			77,473	
◼ 77	1		79,810				
◼ 78	1		80,703				
◼ 79	3		19,624	44,076	16,195		
◼ 80	1				79,340		
◼ 81	2		34,720				45,230
◼ 83	2			4,257			76,600
◼ 84	1						80,281
◼ 85	1						80,842
◼ 89	1			80,481			
◼ 90	1			79,505			

- Total County Pieces: 18
- Districts Changed: 10

NORFOLK 1B

NORFOLK B Map

Different Module   Not Changed

District	Population	Dev%	BVAP%	Fairfax '13	Obama '12	Reock	Polsby-Popper
■ 21	79,608	-0.50%	23.86%	64.66%	52.43%	0.42	0.31
■ 76	79,530	-0.60%	42.40%	68.63%	56.97%	0.45	0.47
■ 77	79,363	-0.81%	47.03%	78.31%	67.86%	0.24	0.18
■ 78	80,475	0.58%	17.14%	64.46%	38.82%	0.46	0.35
■ 79	80,050	0.05%	31.98%	51.65%	60.38%	0.26	0.13
■ 80	79,340	-0.84%	51.38%	57.45%	70.67%	0.55	0.36
■ 81	80,735	0.91%	19.05%	58.62%	42.43%	0.37	0.27
■ 83	80,857	1.06%	23.14%	52.46%	52.87%	0.50	0.29
■ 84	80,281	0.34%	20.45%	56.13%	49.57%	0.44	0.26
■ 85	80,842	1.04%	21.28%	59.80%	51.13%	0.39	0.30
■ 89	80,481	0.59%	54.92%	51.64%	82.47%	0.38	0.48
■ 90	79,505	-0.63%	41.93%	59.55%	69.72%	0.42	0.51
MEAN	80,089	0.10%	32.88%	60.28%	57.94%	0.41	0.33

■ District Unchanged
■ Adjacent District Changed
■ Unconstitutional District

District	Total Counties	Chesapeake City	Norfolk City	Portsmouth City	Suffolk City	Virginia Beach City
■ 21	2	5,030				74,578
■ 76	2	2,057			77,473	
■ 77	1	79,363				
■ 78	1	80,475				
■ 79	3	19,779	44,076	16,195		
■ 80	1			79,340		
■ 81	2	35,505				45,230
■ 83	2		4,257			76,600
■ 84	1					80,281
■ 85	1					80,842
■ 89	1		80,481			
■ 90	1		79,505			

- Total County Pieces: 18
- Districts Changed: 9

97

NORFOLK C Map

Different Module ■ Not Changed

District	Population	Dev%	BVAP%	Fairfax '13	Obama '12	Reock	Polsby-Popper
21	79,608	-0.50%	23.86%	64.66%	52.43%	0.42	0.31
76	79,530	-0.60%	42.40%	68.63%	56.97%	0.45	0.47
77	79,363	-0.81%	47.03%	78.31%	67.86%	0.24	0.18
78	80,475	0.58%	17.14%	64.46%	38.82%	0.46	0.35
79	80,050	0.05%	31.98%	51.65%	60.38%	0.26	0.13
80	79,340	-0.84%	51.38%	57.45%	70.67%	0.55	0.36
81	80,735	0.91%	19.05%	58.62%	42.43%	0.37	0.27
83	79,538	-0.59%	15.12%	46.02%	46.69%	0.52	0.34
84	80,281	0.34%	20.45%	56.13%	49.57%	0.44	0.26
85	82,668	3.32%	22.58%	61.81%	52.40%	0.37	0.24
89	80,481	0.59%	54.92%	51.64%	82.47%	0.38	0.48
90	78,998	-1.26%	49.39%	65.64%	75.36%	0.39	0.43
MEAN	80,089	0.10%	32.94%	60.42%	58.00%	0.40	0.32

■ District Unchanged
■ Adjacent District Changed
■ Unconstitutional District

County Splits

District	Total Counties	Chesapeake City	Norfolk City	Portsmouth City	Suffolk City	Virginia Beach City
■ 21	2	5,030				74,578
■ 76	2	2,057			77,473	
■ 77	1	79,363				
■ 78	1	80,475				
■ 79	3	19,779	44,076	16,195		
■ 80	1			79,340		
■ 81	2	35,505				45,230
■ 83	2		33,008			46,530
■ 84	1					80,281
■ 85	1					80,842
■ 89	1		80,481			
■ 90	2		50,754			28,244

- Total County Pieces: 19
- Districts Changed: 8

3. Implementation of equal protection

(a) Recompiling the 2012 Presidential general election, we see that Barack Obama carries each of the redrawn unconstitutional districts in each of my illustrative modules -- usually by over sixty percent (see full data below). Thus, there can be no doubt that, if a viable African-American candidate wins the Democratic primary in the eleven unconstitutional districts configured as shown in any of my illustrative modules, then that candidate of the Democratic party has a realistic opportunity to win election in the general election due to cohesive voting from within the African-American community and cross-over voting from non-black Democrats – even if that candidate is not an incumbent.

(b) As suggested earlier, one key piece of evidence in determining whether or not we should expect that an African-American candidate has a realistic opportunity to win the Democratic party nomination in these reconfigured versions of the unconstitutional districts is to project into these districts the 2013 vote share of the African-American candidate, Justin Fairfax, in his quest for the Democratic party's nomination to be that party's candidate for statewide office of Attorney General. As noted above Mr. Fairfax was not an incumbent, and his principal opponent was a white candidate with a strong background who went on to win the Democratic primary, statewide, and to subsequently be elected Attorney General of the State of Virginia. Thus, evidence that Mr. Fairfax would have won the 2013 Attorney General Democratic primary within the boundaries of the eleven illustrative

remedial districts that would replace the eleven unconstitutional districts in the

2011 Enacted map in the illustrative modules I have drawn for the Court provides

very strong evidence that a viable black candidate, who achieves cohesive support

from the minority community and perhaps also some cross-over support from white

Democrats, has a realistic opportunity to win the Democratic primary within these

districts, even if not an incumbent.

(c) It is my view that an incumbent legislator campaigning in any of the illustrative

redrawn versions of these unconstitutional districts would have done even better.

Thus, given the recompiled election data presented later in the text, I expect

present incumbents in the eleven unconstitutional districts to win the Democratic

primary in the districts drawn in any of my illustrative modules, assuming that

they run for reelection in 2019. [48]   Even if that incumbent were to retire prior to the

---

[48] In some circumstances, it may be easier for a minority candidate of choice to win
the Democratic primary than to win the general election (e.g., when there are few
white Democrats relative to the number of African-American Democrats, and the
combined African-American and non-African-American vote for the Democratic
candidate is not large enough to win a general election); while in other
circumstances it may be harder for a minority candidate of choice to win the
Democratic primary than to win the general election (e.g., when there are many
more white Democrats than black Democrats, but the combined African-American
and non-African-American vote for the Democratic candidate is large enough for a
Democrat to win a general election). But, as emphasized earlier, to have a
realistically drawn "minority opportunity district" it is necessary to have a realistic
chance to win both a party primary and a general election, running in the latter as
the official candidate of that party. For further discussion of this and related issues
see Bernard Grofman, Lisa Handley & David Lublin, Drawing Effective Minority
Districts: A Conceptual Framework and Some Empirical Evidence, 79 N.C. L. Rev.
1383 (2001).

2020 election, the seat would still be open seat with a high black voting age percentage and a history of electing a minority candidate.

VI. FINDINGS AND RECOMMENDATIONS

1. Re submitted remedial plans

For reasons elaborated in the Appendix, I cannot recommend to the Court any of the five full plans presented to the Court either as of the Court ordered deadline November 2, 2018, or with purely technical corrections submitted soon thereafter. These plans can be eliminated on grounds of lack of narrow tailoring and/or failure to clearly remedy the constitutional infirmity.

2. Re court ordered map

In evaluating compliance with all the various criteria identified in the body of this report that are elements of a constitutional remedy along traditional districting lines, my recommendation is that the Court adopt a plan of its own that draws on the best elements of plans that have been submitted to the Court. I would also propose that it focus on the illustrative map modules I have developed so as to ultimately select a preferred one from each module and then perfecting the remedial map in that portion of the state.

While the modularized maps I submitted to the Court for the various regions of the

state are intended to be illustrative, and there may well be ways of improving them

further, it is my professional judgment that each provides an appropriate and

narrowly tailored means of remedying the constitutional infirmities in the present

unconstitutional districts using traditional districting criteria in a way that clearly

that does not have race as a predominant motive. It is also my view that these

illustrative maps are attentive to the legal issues in this case to which the Court

has called attention. And, to the best of my knowledge, they do not pair any present

incumbents.

3. Re Timeline

Between December 7, 2018 and the hearing on January 10, 2019, with response

briefs due on December 14, the parties will have a full opportunity to present to the

Court their comments on the illustrative maps I provide to the Court and

suggestions for ways in which they should be redrawn. Since I am providing the

Court with modules for different geographic areas of the state, after the Court

hearing of January 10, I expect that the Court will provide me instructions as to

which illustrative geographically specified modules it wishes to see in the final

remedial map, and further instructions as to any additional reconfigurations that it

wishes to see implemented. In particular, at some time after that hearing I expect

to be given instructions by the Court on any reconfiguring of the illustrative maps

that the Court believes is required by the comments of the parties. Once the Court

has agreed on the basic outlines of a remedial map, I should be able to conduct any

court-order further reconfiguring soon after being given these instructions, so that a

court-ordered map can be put into place in a timely fashion.

APPENDIX

Reasons for Recommending to the Court that it

Reject Each of the Five Submitted Remedial Maps

I. Overview

There were five submissions pursuant to the Court's November 2 deadline that

contained plans and maps offered as remedies which had sufficient information

provided for me to evaluate them with respect to the relevant criteria discussed in

the body of my Report. I reference these as Plaintiff's A and Plaintiff's B (from the

plaintiffs), DI7002 and DI7003 from Defendant Intervenors (maps which were first

introduced into the legislature), and the map from   Virginia State Conference of

NAACP Branches, which I henceforth simply label simply as the NAACP map.

The five complete plans/maps offered pursuant to the Court's November 7 deadline

are, in my view, fatally flawed by not offered a fully narrowly tailored remedy for

the constitutional infirmities in the set of eleven districts found to be

unconstitutional instances of race preponderant gerrymandering in that they either

modify some legislative districts that, demonstrably, did not need to be changed to

deal with the constitutional problems identified (e.g., reconfigurations of more

districts than needed for remedial purposes, or having redrawn districts that were

not adjacent to the unconstitutional districts) and/or they failed to satisfactorily

address the constitutional infirmity in some or all of the unconstitutional districts

in a narrowly tailored fashion.

Below I provide summary data charts for each of hese five plans, with comparisons

to the 2011 Enacted map. Because the five submitted remedial plans differed in the

number of districts they changed, and they differ in exactly which districts are

changed, the summary charts below are not organized into modules in the same

way as in the Report's discussion of my own illustrative modules. Rather they are

organized into three groupings of districts that facilitate comparisons across the

plans. The first grouping reports data from the eleven unconstitutional districts.

The second grouping reports data from the additional ten districts (district 27, 62,

68, 72, 73, 76, 79, 81, 85, and 91) which have been changed in all five plans.

However, the summary data on mean and median values reported in the second

chart is that for the combined set of twenty-one districts that are found in the first

two groupings. This way of reporting data allows for more meaningful comparisons

across plans since the set of changed districts being compared in the first two sets of

districts is the same for all plans. Note, however, the degree to which there are

differences in how each plan redrew the 2011 Enacted map, since there are only 21

districts that have been changed in all five plans, with the plans differing in which

districts each changed, so that there are 36 different districts that have been

changed in at least one of the submitted remedial maps.

The third grouping identifies the remaining districts that are changed in the given

plan, but that are not changed in <u>all</u> five submitted remedial maps. Thus, this third grouping is not the same for all plans, e.g. since DI7002 changes 30 districts in total, there are nine districts in the third grouping for that plan. The summary data on mean and median values reported in the third chart is that for all districts that are changed in the given plan. This third grouping is not reported for the 2011 Enacted map.

2011 Enacted Map

Unconstitutional Districts

District	Population	Dev%	BVAP %	Obama '12 %	Fair '13 %	Reock	Perimeter	Polsby-Popper
63	79,602	-0.51%	59.09%	72.18%	68.40%	0.25	161.04	0.16
69	79,386	-0.78%	54.78%	86.08%	61.33%	0.52	31.27	0.34
70	79,382	-0.78%	55.99%	79.82%	66.92%	0.4	64.33	0.19
71	80,322	0.39%	54.87%	87.02%	50.28%	0.33	29.38	0.24
74	79,594	-0.52%	56.91%	75.06%	57.50%	0.16	165.6	0.12
77	79,627	-0.48%	58.44%	77.71%	78.92%	0.19	82.04	0.15
80	80,705	0.87%	55.94%	75.16%	61.01%	0.26	60.01	0.11
89	79,614	-0.49%	54.98%	82.03%	51.92%	0.4	32.29	0.2
90	80,425	0.52%	56.10%	79.98%	67.78%	0.46	35.28	0.2
92	79,689	-0.40%	60.14%	80.00%	77.89%	0.34	39.59	0.26
95	80,071	0.08%	59.35%	79.28%	79.24%	0.14	57.47	0.14
MEAN	79,856	-0.19%	56.96%	79.48%	65.56%	0.31	68.94	0.19
MEDIAN	79,627	-0.48%	56.10%	79.82%	66.92%	0.33	57.47	0.19

Districts Changed In All Plan

District	Population	Dev%	BVAP %	Obama '12 %	Fair '13 %	Reock	Perimeter	Polsby-Popper
27	79,381	-0.79%	18.13%	45.79%	57.85%	0.35	49.01	0.25
62	79,677	-0.42%	24.23%	46.93%	64.83%	0.36	122.58	0.13
68	79,611	-0.50%	7.05%	44.70%	40.25%	0.36	44.72	0.25
72	80,764	0.94%	13.16%	45.26%	41.33%	0.26	75.1	0.08
73	80,135	0.16%	13.26%	46.75%	41.48%	0.39	50.4	0.15
76	80,313	0.38%	24.88%	43.89%	65.98%	0.48	152.26	0.17
79	80,243	0.29%	29.13%	62.15%	48.50%	0.45	48.26	0.26
81	79,438	-0.71%	18.28%	41.62%	54.83%	0.4	144.98	0.23
85	80,800	0.99%	18.51%	49.76%	57.51%	0.4	32.25	0.24
91	79,229	-0.98%	19.24%	44.26%	62.88%	0.6	70.76	0.47
MEAN	79,905	-0.13%	38.69%	64.07%	59.84%	0.36	73.74	0.21
MEDIAN	79,677	-0.42%	54.78%	72.18%	61.01%	0.36	57.47	0.20

DI7002

Unconstitutional Districts

District	Population	Dev%	BVAP %	Obama '12 %	Fair '13 %	Reock	Perimeter	Polsby-Popper
63	79,308	-0.88%	55.09%	66.80%	68.39%	0.66	128.14	0.46
69	79,561	-0.56%	54.41%	83.12%	65.22%	0.43	44.96	0.15
70	79,380	-0.79%	61.77%	85.29%	60.82%	0.47	73.3	0.14
71	80,222	0.27%	56.44%	86.32%	50.95%	0.28	30.5	0.28
74	79,379	-0.79%	44.27%	64.33%	58.56%	0.15	79.04	0.15
77	79,508	-0.63%	46.76%	68.72%	78.49%	0.24	48.88	0.21
80	79,767	-0.30%	47.42%	72.14%	55.96%	0.46	29.22	0.39
89	80,435	0.53%	51.44%	80.43%	50.36%	0.46	30.65	0.2
90	80,805	0.99%	58.59%	80.21%	68.12%	0.39	38.42	0.19
92	79,268	-0.93%	55.27%	76.90%	76.93%	0.35	58.34	0.26
95	79,811	-0.25%	60.02%	78.32%	78.29%	0.4	44.33	0.26
MEAN	79,768	-0.30%	53.77%	76.60%	64.73%	0.39	55.07	0.24
MEDIAN	79,561	-0.56%	55.09%	78.32%	65.22%	0.40	44.96	0.21

Districts Changed In All Plan

District	Population	Dev%	BVAP %	Obama '12 %	Fair '13 %	Reock	Perimeter	Polsby-Popper
27	79,511	-0.62%	18.50%	44.74%	61.00%	0.5	49.11	0.28
62	80,627	0.77%	25.46%	46.29%	63.93%	0.42	102.68	0.18
68	79,342	-0.83%	11.38%	49.47%	43.61%	0.33	38.34	0.34
72	80,198	0.24%	14.31%	46.72%	42.92%	0.3	41.1	0.2
73	79,927	-0.10%	11.27%	45.46%	36.32%	0.41	32.29	0.39
76	79,657	-0.44%	27.26%	44.78%	61.66%	0.48	114.69	0.23
79	80,270	0.33%	38.05%	66.76%	56.81%	0.27	57.74	0.19
81	79,236	-0.97%	19.78%	42.87%	58.69%	0.37	148.59	0.27
85	80,479	0.59%	19.57%	50.30%	58.02%	0.39	29.97	0.28
91	79,483	-0.66%	18.16%	43.29%	61.86%	0.29	81.68	0.3
MEAN	79,818	-0.24%	37.87%	63.01%	59.85%	0.38	62.00	0.25
MEDIAN	79,657	-0.44%	44.27%	66.76%	60.82%	0.39	48.88	0.26

Changed Additional Districts

District	Population	Dev%	BVAP %	Obama '12 %	Fair '13 %	Reock	Perimeter	Polsby-Popper
64	79,650	-0.45%	34.07%	47.84%	66.73%	0.29	327.24	0.13
66	79,975	-0.04%	20.48%	42.29%	64.64%	0.24	112.95	0.14
75	79,823	-0.23%	53.37%	60.83%	60.11%	0.4	316.31	0.27
78	79,662	-0.43%	16.79%	38.42%	64.43%	0.48	47.76	0.38
83	79,691	-0.40%	15.23%	46.76%	46.11%	0.51	43.59	0.31
93	79,857	-0.19%	27.40%	64.51%	53.37%	0.2	80.25	0.15
94	79,210	-1.00%	22.24%	51.14%	48.92%	0.45	47.25	0.38
97	80,081	0.09%	14.97%	33.09%	48.35%	0.38	218	0.21
100	79,915	-0.12%	27.64%	55.06%	38.85%	0.28	271.3	0.37
MEAN	79,801	-0.26%	34.25%	58.77%	58.28%	0.38	92.22	0.26
MEDIAN	79,729	-0.35%	27.52%	53.10%	59.40%	0.39	53.43	0.26

DI7003

Plan Details

Unconstitutional Districts

District	Population	Dev%	BVAP %	Obama '12 %	Fair '13 %	Reock	Perimeter	Polsby-Popper
63	79,859	-0.19%	51.81%	63.21%	68.11%	0.43	175.72	0.17
69	79,444	-0.71%	52.69%	83.37%	62.80%	0.45	34.51	0.29
70	80,662	0.81%	53.54%	73.51%	64.03%	0.4	107.63	0.13
71	79,973	-0.05%	51.44%	85.12%	50.26%	0.46	26.74	0.28
74	79,626	-0.48%	49.36%	69.85%	57.52%	0.15	99.65	0.11
77	80,076	0.08%	47.41%	70.46%	78.10%	0.29	47.94	0.19
80	79,299	-0.89%	48.39%	71.72%	55.15%	0.49	30.1	0.32
89	80,235	0.28%	52.24%	78.97%	51.68%	0.23	35.19	0.17
90	80,391	0.48%	52.95%	77.09%	66.22%	0.48	36.12	0.22
92	79,305	-0.88%	57.26%	77.83%	76.51%	0.33	54.55	0.3
95	79,367	-0.80%	54.52%	75.68%	79.00%	0.25	59.8	0.15
MEAN	79,840	-0.21%	51.97%	75.17%	64.49%	0.36	64.36	0.21
MEDIAN	79,859	-0.19%	52.24%	75.68%	64.03%	0.40	47.94	0.19

Districts Changed In All Plan

District	Population	Dev%	BVAP %	Obama '12 %	Fair '13 %	Reock	Perimeter	Polsby-Popper
27	79,259	-0.94%	15.88%	43.39%	56.01%	0.31	45.95	0.28
62	80,219	0.26%	28.19%	49.51%	66.12%	0.27	101.96	0.17
68	79,236	-0.97%	14.80%	47.83%	41.90%	0.35	45.94	0.23
72	79,666	-0.43%	16.38%	48.66%	44.93%	0.28	46.83	0.16
73	79,478	-0.66%	13.57%	45.96%	38.39%	0.39	42.97	0.22
76	79,975	-0.04%	27.24%	45.12%	64.84%	0.51	153.88	0.18
79	80,714	0.88%	46.80%	69.85%	56.26%	0.19	76.42	0.16
81	80,640	0.79%	20.23%	44.97%	57.86%	0.39	137.28	0.25
85	79,676	-0.42%	20.57%	50.79%	56.78%	0.29	40.75	0.14
91	80,096	0.11%	20.98%	45.19%	65.03%	0.28	88.11	0.26
MEAN	79,866	-0.18%	37.92%	62.77%	59.88%	0.34	70.86	0.21
MEDIAN	79,859	-0.19%	47.41%	69.85%	57.86%	0.33	47.94	0.19

Changed Additional Districts

District	Population	Dev%	BVAP %	Obama '12 %	Fair '13 %	Reock	Perimeter	Polsby-Popper
21	80,538	0.66%	25.62%	54.05%	66.85%	0.29	33.63	0.2
55	79,697	-0.39%	15.29%	38.08%	48.09%	0.46	213.65	0.19
64	79,225	-0.98%	26.18%	42.78%	62.72%	0.37	333.51	0.14
66	79,703	-0.38%	23.73%	45.31%	67.58%	0.34	76.09	0.2
78	79,451	-0.70%	15.74%	37.24%	62.93%	0.54	47.02	0.44
82	79,675	-0.42%	9.94%	41.72%	37.55%	0.52	56.15	0.45
83	80,727	0.90%	16.49%	48.02%	44.96%	0.3	47.72	0.22
84	79,838	-0.21%	19.50%	48.72%	54.76%	0.5	37.89	0.34
93	79,432	-0.72%	29.74%	64.21%	53.03%	0.21	78.81	0.15
97	79,477	-0.67%	15.10%	33.12%	48.35%	0.38	217.52	0.21
100	80,285	0.34%	27.78%	53.31%	38.77%	0.27	269.15	0.38
MEAN	79,851	-0.20%	31.92%	57.02%	57.60%	0.36	90.60	0.23
MEDIAN	79,700	-0.39%	26.71%	50.15%	57.15%	0.35	55.35	0.21

NAACP

Unconstitutional Districts

District	Population	Dev%	BVAP %	Obama '12 %	Fair '13 %	Reock	Perimeter	Polsby-Popper
63	79,233	-0.97%	58.52%	71.93%	68.27%	0.41	121.22	0.2
69	79,224	-0.98%	50.37%	82.14%	62.15%	0.44	30.42	0.34
70	79,557	-0.57%	46.49%	71.37%	64.42%	0.51	57.06	0.36
71	79,237	-0.97%	49.95%	80.79%	48.70%	0.36	27.37	0.27
74	79,248	-0.95%	43.83%	64.04%	59.94%	0.31	137.06	0.21
77	80,541	0.66%	47.51%	69.18%	77.78%	0.25	47.84	0.24
80	80,762	0.94%	49.72%	66.23%	63.81%	0.37	38.56	0.28
89	61,522	-23.11%	61.66%	84.84%	54.10%	0.47	20.35	0.44
90	80,414	0.50%	45.97%	70.11%	64.34%	0.34	27.14	0.36
92	79,344	-0.83%	57.60%	78.58%	76.13%	0.33	61.21	0.25
95	79,762	-0.31%	50.67%	74.37%	77.99%	0.2	38.33	0.28
MEAN	78,077	-2.42%	51.12%	73.96%	65.24%	0.36	55.14	0.29
MEDIAN	79,344	-0.83%	49.95%	71.93%	64.34%	0.36	38.56	0.28

Districts Changed In All Plan

District	Population	Dev%	BVAP %	Obama '12 %	Fair '13 %	Reock	Perimeter	Polsby-Popper
27	80,576	0.71%	16.91%	49.69%	47.78%	0.28	42.49	0.28
62	79,287	-0.90%	25.51%	51.94%	63.58%	0.36	46.57	0.29
68	79,758	-0.32%	7.63%	37.14%	35.01%	0.27	55.9	0.2
72	80,604	0.74%	42.49%	65.84%	54.55%	0.23	51.45	0.22
73	79,546	-0.58%	16.53%	52.39%	45.60%	0.63	26.63	0.44
76	79,382	-0.78%	42.53%	57.16%	68.51%	0.38	87.49	0.5
79	100,089	25.10%	30.76%	62.54%	45.54%	0.48	48.64	0.27
81	80,023	0.02%	18.24%	39.67%	67.47%	0.57	73.96	0.49
85	80,099	0.11%	29.40%	60.99%	64.93%	0.32	24.21	0.32
91	79,574	-0.54%	22.42%	46.07%	67.01%	0.5	62.08	0.47
MEAN	79,894	-0.14%	38.80%	63.67%	60.84%	0.38	53.62	0.32
MEDIAN	79,574	-0.54%	43.83%	65.84%	63.81%	0.36	47.84	0.28

NAACP

Changed Additional Districts

District	Population	Dev%	BVAP %	Obama '12 %	Fair '13 %	Reock	Perimeter	Polsby-Popper
21	80,689	0.85%	21.94%	49.07%	65.37%	0.5	27.73	0.5
64	79,226	-0.98%	24.84%	42.12%	63.79%	0.42	317.02	0.15
65	79,318	-0.86%	15.56%	32.02%	50.25%	0.29	214.11	0.21
66	79,230	-0.97%	17.42%	38.88%	63.34%	0.48	73.55	0.29
75	79,219	-0.99%	54.60%	61.41%	61.08%	0.43	373.47	0.2
78	80,142	0.17%	14.35%	38.30%	46.38%	0.55	93.9	0.47
83	79,213	-1.00%	16.23%	47.45%	47.22%	0.52	41.47	0.35
84	80,100	0.11%	22.99%	53.64%	60.38%	0.4	37	0.23
94	79,738	-0.34%	29.34%	56.52%	52.80%	0.32	43.25	0.49
MEAN	79,822	-0.24%	34.40%	58.55%	59.61%	0.40	78.25	0.32
MEDIAN	79,566	-0.56%	30.08%	59.08%	62.74%	0.39	48.24	0.29

PLAINTIFFS A

Unconstitutional Districts

District	Population	Dev%	BVAP %	Obama '12 %	Fair '13 %	Reock	Perimeter	Polsby-Popper
63	79,436	-0.72%	55.79%	67.56%	68.02%	0.59	120.1	0.51
69	79,489	-0.65%	50.79%	80.96%	64.26%	0.46	30.87	0.35
70	79,412	-0.75%	58.47%	81.27%	62.30%	0.41	69.98	0.19
71	79,515	-0.62%	50.89%	83.82%	49.90%	0.38	26.02	0.3
74	79,880	-0.16%	52.30%	72.11%	56.14%	0.26	52.08	0.22
77	80,448	0.55%	46.99%	68.15%	78.51%	0.26	47.16	0.25
80	79,924	-0.11%	51.92%	68.90%	62.06%	0.39	34.46	0.28
89	80,517	0.63%	51.71%	79.31%	50.19%	0.5	24.42	0.43
90	79,228	-0.98%	45.30%	72.38%	60.21%	0.48	25.01	0.46
92	79,959	-0.06%	58.15%	78.84%	76.89%	0.32	53.33	0.31
95	79,667	-0.43%	49.29%	73.33%	72.81%	0.25	39.48	0.34
MEAN	79,770	-0.30%	51.96%	75.15%	63.75%	0.39	47.54	0.33
MEDIAN	79,667	-0.43%	51.71%	73.33%	62.30%	0.39	39.48	0.31

Districts Changed In All Plan

District	Population	Dev%	BVAP %	Obama '12 %	Fair '13 %	Reock	Perimeter	Polsby-Popper
27	79,469	-0.68%	23.40%	48.69%	64.54%	0.48	50.57	0.29
62	80,065	0.07%	27.72%	50.65%	61.81%	0.34	152.83	0.18
68	79,218	-0.99%	12.52%	48.30%	44.71%	0.34	38.62	0.31
72	80,432	0.53%	12.64%	45.56%	42.67%	0.29	43.02	0.2
73	79,730	-0.35%	12.55%	45.09%	37.78%	0.39	41.43	0.24
76	79,530	-0.60%	42.40%	56.97%	68.63%	0.45	84.89	0.47
79	80,217	0.26%	31.37%	61.56%	47.50%	0.44	46.26	0.27
81	80,691	0.85%	16.73%	40.40%	57.21%	0.37	144.27	0.28
85	80,754	0.93%	20.75%	50.30%	59.49%	0.39	30.96	0.27
91	79,503	-0.63%	25.11%	48.56%	70.15%	0.48	62.07	0.49
MEAN	79,861	-0.19%	37.94%	62.99%	59.80%	0.39	57.99	0.32
MEDIAN	79,730	-0.35%	45.30%	67.56%	61.81%	0.39	46.26	0.29

Changed Additional Districts

District	Population	Dev%	BVAP %	Obama '12 %	Fair '13 %	Reock	Perimeter	Polsby-Popper
56	80,046	0.04%	17.49%	38.52%	48.39%	0.45	228.12	0.26
64	79,452	-0.70%	29.70%	44.22%	65.81%	0.29	280.96	0.17
65	79,682	-0.41%	9.96%	31.86%	44.01%	0.49	111.57	0.35
66	79,330	-0.85%	16.65%	37.64%	63.51%	0.3	91.46	0.29
75	79,287	-0.90%	52.45%	59.81%	58.23%	0.41	286.99	0.32
78	80,037	0.03%	18.02%	39.57%	65.24%	0.44	51.45	0.32
82	79,504	-0.63%	10.88%	42.55%	36.62%	0.55	56.5	0.45
83	80,774	0.95%	22.24%	51.32%	51.45%	0.44	38.98	0.32
84	79,655	-0.44%	21.57%	50.70%	57.29%	0.41	39.57	0.3
93	79,232	-0.97%	19.92%	54.85%	50.73%	0.21	86.53	0.15
94	79,268	-0.93%	30.04%	57.85%	55.28%	0.48	35.28	0.63
100	80,680	0.84%	27.23%	54.89%	39.86%	0.29	262.49	0.39
MEAN	79,819	-0.24%	32.51%	57.17%	57.34%	0.39	84.48	0.32
MEDIAN	79,667	-0.43%	27.72%	54.85%	58.23%	0.41	51.45	0.30

PLAINTIFFS B

Unconstitutional Districts

District	Population	Dev%	BVAP %	Obama '12 %	Fair '13 %	Reock	Perimeter	Polsby-Popper
63	79,436	-0.72%	55.79%	67.56%	68.02%	0.59	120.09	0.51
69	80,340	0.41%	49.31%	81.64%	61.26%	0.46	30.09	0.37
70	79,350	-0.82%	54.09%	71.61%	61.48%	0.3	148.81	0.2
71	79,515	-0.62%	50.89%	83.82%	49.90%	0.38	26.25	0.29
74	79,242	-0.96%	58.98%	77.79%	56.66%	0.21	50.54	0.22
77	80,448	0.55%	46.99%	68.15%	78.51%	0.26	47.16	0.25
80	79,924	-0.11%	51.92%	68.90%	62.06%	0.39	34.46	0.28
89	80,517	0.63%	51.71%	79.31%	50.19%	0.5	24.42	0.43
90	79,228	-0.98%	45.30%	72.38%	60.21%	0.48	25.01	0.46
92	79,959	-0.06%	58.15%	78.84%	76.89%	0.32	53.33	0.31
95	79,667	-0.43%	49.29%	73.33%	72.81%	0.25	39.48	0.34
MEAN	79,784	-0.28%	52.04%	74.85%	63.45%	0.38	54.51	0.33
MEDIAN	79,667	-0.43%	51.71%	73.33%	61.48%	0.38	39.48	0.31

Districts Changed In All Plan

District	Population	Dev%	BVAP %	Obama '12 %	Fair '13 %	Reock	Perimeter	Polsby-Popper
27	79,675	-0.42%	23.01%	48.86%	64.29%	0.5	55.36	0.24
62	79,916	-0.12%	28.88%	54.12%	68.47%	0.3	91.19	0.12
68	79,334	-0.84%	10.39%	45.86%	43.32%	0.36	45.49	0.24
72	80,257	0.31%	13.65%	46.59%	45.13%	0.32	36.2	0.25
73	79,730	-0.35%	12.55%	45.09%	37.78%	0.39	41.43	0.24
76	79,530	-0.60%	42.40%	56.97%	68.63%	0.45	84.89	0.47
79	80,217	0.26%	31.37%	61.56%	47.50%	0.44	46.26	0.27
81	80,691	0.85%	16.73%	40.40%	57.21%	0.37	144.27	0.28
85	80,754	0.93%	20.75%	50.30%	59.49%	0.39	30.96	0.27
91	79,503	-0.63%	25.11%	48.56%	70.15%	0.48	62.16	0.49
MEAN	79,868	-0.18%	37.97%	62.93%	60.00%	0.39	58.95	0.31
MEDIAN	79,730	-0.35%	45.30%	67.56%	61.26%	0.39	46.26	0.28

PLAINTIFFS B

Changed Additional Districts

District	Population	Dev%	BVAP %	Obama '12 %	Fair '13 %	Reock	Perimeter	Polsby-Popper
56	79,641	-0.46%	14.42%	37.81%	46.24%	0.37	196.15	0.25
64	79,452	-0.70%	29.70%	44.22%	65.81%	0.29	280.87	0.17
65	79,871	-0.17%	13.22%	32.29%	46.46%	0.34	179.27	0.25
75	79,287	-0.90%	52.45%	59.81%	58.23%	0.41	286.99	0.32
78	80,037	0.03%	18.02%	39.57%	65.24%	0.44	51.45	0.32
82	79,504	-0.63%	10.88%	42.55%	36.62%	0.55	56.5	0.45
83	80,774	0.95%	22.24%	51.32%	51.45%	0.44	38.98	0.32
84	79,655	-0.44%	21.57%	50.70%	57.29%	0.41	39.57	0.3
93	79,232	-0.97%	19.92%	54.85%	50.73%	0.21	86.96	0.15
94	79,268	-0.93%	30.04%	57.85%	55.28%	0.48	35.28	0.63
100	80,680	0.84%	27.23%	54.89%	39.86%	0.29	262.49	0.39
MEAN	79,832	-0.22%	33.03%	57.73%	57.29%	0.39	86.01	0.32
MEDIAN	79,671	-0.42%	29.29%	54.87%	57.76%	0.39	51.00	0.29

II. Identified flaws

While I cannot recommend the adoption of any of the plans in their present form, I have reviewed the features of each of these submitted proposed remedial maps with an eye toward the possibility of modifying elements of these submitted plans that were consistent with a narrowly tailored remedy in preparing the configurations of my own illustrative remedial maps. I discuss below, in more detail than in the body of the Report, the reasons why I cannot recommend to the Court any of the submitted remedial maps.

1. First, each of the five plans changes 30 or more districts. DI7002 changes 30; DI7003 changes 32; the NAACP changes 30; Plaintiffs' A changes 33 and Plaintiffs' B changes 32.   My own examination of alternative mapping demonstrate that reconfiguration of more than 30 of the districts in the 2011 Enacted Plan was certainly not necessitated by the need to address the constitutional infirmities in the eleven districts found to be unconstitutional. Indeed, the illustrative remedial maps that can be constructed from the modules I have submitted to the Court would lead to a change in only from 21 to 26 districts.

Even were an excessive number of changed districts the only flaw, I cannot recommend a plan with this flaw, and so for this reason alone I cannot recommend DI7003, nor can I recommend either of Plaintiffs' plans. As noted in the Report,

changes in even as many as 30 districts are, in my view, not needed to fully remedy

the constitutional infirmities in the eleven unconstitutional districts, thus rendering

DI7002 and the NAACP plan also highly problematic.

2. Second, four of these plans change districts that are not adjacent to the

unconstitutional districts. In particular, both Plaintiffs Plan A and Plaintiffs Plan

B change both district 65 and district 56; while the NAACP plan changes district

65, and DI7003 changes district 21. My own examination of alternative mapping

demonstrate that reconfiguration of these additional districts was not necessitated

by the need to address the constitutional infirmities in the eleven districts found to

be unconstitutional. Even were this the only flaw, I cannot recommend a plan with

this flaw, and so for this reason alone I cannot recommend DI7003, Plaintiffs Plan

A, Plaintiffs Plan B, or the NAACP plan.

In sum, since four of the five submitted plans make changes in some districts that

did not need to be changed in order to remedy the constitutional violation, I cannot

recommend DI7003, Plaintiffs Plan A, Plaintiffs Plan B, or the NAACP plan to the

Court, and the remaining plan, DI7002, by changing 30 districts is also highly

problematic. Moreover, each of the plans has other major flaws.

Another indicator of a failure to create a narrowly tailored remedy is redrawing of

remedial districts with a greater than 60% black voting age population, without

evidence that such a high black percentage was needed to avoid vote dilution. My own illustrative configurations, and the analyses I have done of these configurations, indicate that it not necessary to avoid vote dilution to drawn maps in which any of the redrawn districts exceed 55% black voting age population. Even if having some districts which exceed 60% black voting age population were the only problem with a submitted remedial plan, because it is a clear signal of a failure to address the need for a narrowly tailored remedy, in the absence of evidence that such a configuration was needed to avoid vote dilution, or compelled by geographic or demographic factors, I cannot recommend plans which have this feature to the Court.

Similarly, there are simply no good reasons to increase the African-American voting age population in any of the unconstitutional districts above what is found in the 2011 Enacted map. Thus, I cannot recommend to the Court any plan that increases the African-American voting age population in any of the unconstitutional districts above what is found in the 2011 Enacted map.

(a) The HB7002 plan offered by Defendant-Intervenors has 6 of its 11 redrawn unconstitutional districts still with black voting age population above 55%, and two of these have BVAP above 60%, and it increases black voting age population in four of the six districts in it with BVAP above 55% as compared to the 2011 Enacted plan..

(b) The HB7003 plan offered by Defendant-Intervenors has 1 of its 11 redrawn unconstitutional districts with black voting age population above 55%.

(c) The NAACP plan has 1 of its 11 redrawn unconstitutional districts with black voting age population above 55%.

(d) Plaintiffs plan A has 3 of its redrawn unconstitutional districts still with a greater than 55% black population -- districts 63 (55.8%), 70 (58.5 %), and 92 (58.2 %), and it increases black voting age population in district 70 as compared to the 2011 Enacted plan.

(e) Plaintiffs plan B also has 3 of its redrawn unconstitutional districts still with a greater than 55% black population (districts 63 and 74, and 92), and it increases black voting age population in district 74 as compared to the 2011 Enacted plan (59.8% vs. 56.1%).

In my view, from a narrow tailoring perspective, there would need to be a clear justification for remedial districts with a black population above 55%, or ones that increase black population in an unconstitutional district over what it had been in the 2011 Enacted map. Because a Court-adopted plan must be narrowly tailored, based solely on the black voting age percentages in the reconfigured remedial

districts discussed above, I clearly cannot recommend either of Plaintiffs remedial plans A or B, or HB7002 for adoption by the Court, and I find the two others problematic for this reason.

3. A third distinct indicator of a failure to create a narrowly tailored remedy is redrawing of remedial districts (and adjacent redrawn districts) in a way that unnecessarily fragments counties and other pre-existing political units. In general, traditional districting criteria would lead to the creation of districts that are centered in particular counties and do not involve pieces (especially multiple pieces) of multiple counties, and which keep counties and other administrative units whole to the extent feasible, except as required by population or geographic considerations or concern to avoid vote dilution. My own illustrative configurations and the analyses I have done of these configurations indicate that such geographic or population constraints do not apply, nor is it necessary to avoid vote dilution by redrawing maps with large numbers of county splits. Even if having a large number of unnecessary county splits were the only problem with a submitted remedial plan, because it is a clear signal of a failure to address the need for a narrowly tailored remedy, in the absence of evidence that such a configuration was needed to avoid vote dilution or compelled by geographic or population factors, I cannot recommend plans that have this feature to the Court.[49]

---

[49] I should note that the more districts one changes from their configurations in the 2011 Enacted map, the easier is, *ceteris paribus*, to eliminate unnecessary county splits by reconfiguring all the districts that contain portions of the county in a way

The 2011 Enacted Map is one with a very high number of county splits. The

number of county splits is reduced in all five of the submitted remedial maps.

Nonetheless, looking at the treatment of particular counties, such as Richmond, the

number of county splits in those plans is excessive in my view in terms of a

narrowly tailored remedial plan drawn according to traditional districting criteria,

and cannot be justified by the need to avoid pairing incumbents.

While I have generated data tables that indicate county splits in each of the

remedial plans in the three sets used for the previous data tables (the eleven

unconstitutional districts, the ten districts that are changed in all plans, and the

districts that are changed in a particular plan but not in all plans), because there

are compelling reasons to reject each of remedial plans before we get to a county

split comparison and because of space considerations, I have not bothered to

reproduce those tables in this Appendix. Rather I will simply focus on excessive

---

more sensitive to traditional districting criteria.   Because the illustrative maps I
have provided have sought to minimize the number of districts that are changed,
they also contain more county pieces than would be the case were the same
principles of traditional districting applied in those maps be applied to a wider
geographic area encompassing changes in more districts. If we look only at the
districts actually changed in my illustrative maps, these maps nonetheless perform
better, on average, vis-à-vis the criterion of minimizing county splits, than any of
the remedial maps. My illustrative remedial maps perform especially well with
respect to this criterion vis-à-vis the eleven unconstitutional districts. In particular,
as indicated in the Report, plans can be created based on my illustrative modules
that allow for eight of the eleven unconstitutional districts to lie within a single
county, and this allows for reduction in the number of splits of that county.

splits in some counties in each submitted remedial map. In the data reported below

I only report the total splits for those districts that were changed in the plan.[50] Here

a county split is counted when some portions of a county are contained in a district.

I treat the issue of fracking, i.e., where the pieces of that county in the given district

are discontiguous from one another and thus might be counted as more than a

single piece, as a separate issue.

(a) In the 30 districts redrawn in this remedial map, the D17002 plan splits

Chesterfield so that it has pieces in 7 of the changed districts. Even though

Chesterfield, too, is a large county, this number of splits is completely unnecessary.

And, Norfolk is split in the redrawn districts this plan in 6 pieces, again an

unnecessary number of county splits. And Richmond is split in 5 pieces, again an

unnecessary number of county splits. And Henrico is split into 6 districts, again an

unnecessary number of splits.

(b) In the 32 districts it has redrawn in its remedial map, the DI7003 plan in its

changed districts splits Chesterfield so that it has pieces in 7 redrawn districts.

Even though Chesterfield, too, is a large county, this number of splits is completely

unnecessary. And Richmond is split in 5 pieces, again an unnecessary number of

---

[50] Thus there may well be county splits that are not being tallied if those are in districts that were left unchanged from their configuration in the 2011 Enacted map. This tallying process is different from what is provided in the body of the Report for my illustrative modules, where information on unchanged districts in the geographic region of the unconstitutional district (s) is also being reported.

county splits. And Henrico is split into 7 districts, an unnecessary number of splits. And, Norfolk is split in this plan in 6 pieces, a clearly unnecessary number of splits.

(c) In the 30 districts it has redrawn in its remedial map, the NAACP plan splits Chesterfield so that it has pieces in 8 districts. Even though Chesterfield is a large county, this number of splits is completely unnecessary. And Richmond is split in 5 pieces, again an unnecessary number of county splits. However, Norfolk in the NAACP map is split into only 4 districts, fewer than in Defendant-Intervenors' plans, and it is otherwise generally as good or better with respect to county splits as Defendant –intervenor plans.

(d) In the 33 districts it has redrawn in its remedial map, Plaintiffs plan A splits Chesterfield so that it has pieces in 6 districts in the districts redrawn in that plan, more than needed; Henrico is split into 6 districts. However, Richmond is split in only 4 pieces in Plaintiffs' Plan A, fewer than in the Defendant Intervenor plans.

(e) In the 32 districts it has redrawn in its remedial map, Plaintiffs' plan B splits Chesterfield so that it has pieces in 6 districts. Even though Chesterfield is a large county, this number of splits is unnecessary. And Richmond is split in 5 pieces, again an unnecessary number of county splits. Henrico, however, is split into 5 districts, fewer than in the Defendant Intervenor plans.

4. The standard way to count county splits is simply to ask whether or not a county has population located within a given district and count the number of districts for which this is true. That is the method employed above and in the body of this Report, and in the customary map analysis reports produced by legislative staff of the Virginia Chamber of Delegates. But, as I reviewed the 2011 Enacted map I realized that, in some districts, including four of the eleven unconstitutional districts (63, 70, 90 and 95), one in each of the four geographic areas of the state identified above which contained one or more legislative districts found to be unconstitutional, the 2011 Enacted plan had a feature that, in my view, should not exist in any court-ordered map. I therefore checked for the presence of this feature in all the proposed remedial maps.

The feature in question is what I have labeled "fracking" (in parallel with other terms in the redistricting literature such as "cracking," "packing" and "stacking"). *Fracking* occurs when the county population found within a given district consists of two or more discontiguous pieces. Absent a situation in which a political jurisdiction is legally defined as having discontiguous pieces, the presence of fracked counties shows what I (and I believe all redistricting specialists) would regard as either a poorly constructed map, or a signal of possible intended racial (or partisan or incumbent protection) gerrymandering, It involves intended manipulation of county boundaries in a way that violates traditional principles of districting in

127

failing to minimize unnecessary splits of the populations contained within pre-existing political units. By simple geographic logic there can never be a population-based reason for fracking, since any frack can be remedied by simply swapping equal populations from the fracked county across districts so as to eliminate the fracking.

If a proposed remedial map contained fracking, I treated that fact as a sufficient reason not to recommend that remedial plan to the Court, since such a feature would indicate a poorly constructed map with a feature that a court seeking to use traditional districting criteria to the extent feasible would not wish to order into effect.   A frack could also serve as a a signal of possible gerrymandering intent, and even were the frack to be argued to be directed toward incumbent protection, it would need to be demonstrated that the fracking did not interfere with the drawing of a plan in a constitutional fashion.

District 70 in DI7002 fracks Richmond County; similarly, district 70 in DI7003 also fracks Richmond County. For that reason alone, I cannot recommend that map to the Court.   Because identifying fracks is a time consuming process, and because there were compelling reasons to reject the other submitted remedial maps because of features such as the total number of districts reconfigured in each, I did not pursue further my search for fracking in the remedial maps.

5. Compactness: On average, of the five submitted plans, if we look only at the unconstitutional districts, all plans are as good or better than the Enacted Map with respect to both Polsby-Popper and Reock scores. While there are differences in compactness scores across the five submitted remedial plans, with Plaintiffs plans A and B being as good or best with respect to both criteria, and DI7003 being clearly the worst with regard to one of them, I do not regard the differences across the five plans as large enough to justify a clear superiority of one plan over another with respect to compactness, since all are superior to the 2011 Enacted Map on both criteria.

Overall comparisons: None of the five plan is clearly superior to all other plans with respect to all of the relevant criteria, but most importantly:

(a) Three of the five plans fail a narrow tailoring test in terms of changing more districts than need to be changed to remedy constitutional infirmities, with four failing a narrow tailoring test by changing the boundaries of districts that are not adjacent to any of the unconstitutional eleven.

(b) All five plans fail a narrow tailoring test in terms of avoiding the perpetuation of at least one district with a greater than 55% black voting age population without evidence that such as percentage is needed to avoid minority vote dilution; and some of the plans (Plaintiffs A and Plaintiffs B, DI2002) actually increase black

voting age population in some of the redrawn unconstitutional districts from what it was in the 2011 Enacted plan

(c) None of the five plans is narrowly tailored with respect to preservation of county boundaries, Each exhibits an excessive number of avoidable county splits, with a particular issue being the degree to which some large counties are fragmented. Moreover, DI7002 and DI7003 exhibit fracking in district 70.

Thus, each of the plans fail a narrow tailoring test with respect to one or more of the narrow tailoring tests identified above. Hence, my recommendation is that none of the five plans be adopted by the Court, since they fail to offer a narrowly tailored remedy.

Nonetheless, as I indicated earlier, since each of these plans is better than the Enacted Plan with respect to at least one traditional districting criteria, I sought to carefully review key geographic elements of each of these proposed remedial plans with the goal of identifying features of each that might usefully be incorporated in whole or in part in the illustrative remedy maps that I offer to the Court. My careful review of the geography and demography of the state and of the key features of proposed remedial plans by all of the parties, has allowed me to offer to the Court a modularized approach to effectuating a constitutional map in which I present to the Court a set of options for different geographic areas of the state that resolve

tradeoffs among traditional redistricting criteria in slightly different ways.